Morice Land & Resource Management Plan

Morice Land and
Resource Management
Plan

Socio-Economic and Environmental Assessment:

Morice LRMP Table
Final Land Use Recommendation

Prepared for:
Ministry of Sustainable Resource Management
Skeena Region

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In developing the socio-economic estimates prepared for this study, the consultants have made several forecasts and assumptions utilizing information gathered under the time and resource constraints imposed on this study. These forecasts and assumptions are thought to be reasonable and suitable for the purposes of this analysis, but should not be relied upon for other purposes.

The Morice LRMP area boundaries do not always coincide with management unit boundaries for the resource values potentially impacted by the LRMP. It was difficult to source baseline data and assess impacts of the Morice LRMP on these resource values. In undertaking this task, the consultants have been required to make estimates of the socio-economic significance of resource values and associated activities in the Plan Area, based on data from broader or narrower geographic areas or management jurisdictions for some of the resource values.

TABLE OF CONTENTS

EXECUTIVE SUMMARY i

1 INTRODUCTION 1

- 1.1 MORICE LRMP OBJECTIVES 1
- 1.2 OVERVIEW OF MORICE PLAN AREA POPULATION AND ECONOMY 2
- 1.3 KEY ELEMENTS OF THE MORICE LRMP 4
- 1.4 MSRM METHODOLOGY FOR SOCIO-ECONOMIC AND ENVIRONMENTAL ASSESSMENT 4

2 ASSESSMENT OF PLAN IMPACTS ON PRIMARY INDUSTRIAL SECTORS 7

- 2.1 FORESTRY 7
  - *2.1.1 Forest Industry Overview 7*
  - *2.1.2 Base Case Management Regime 8*
  - *2.1.3 Morice LRMP Resource Management Zones and Timber Value Distribution 10*
  - *2.1.4 Morice LRMP Benefits to the Forest Industry 11*
  - *2.1.5 Potential Timber Supply Volume Impacts 12*
  - *2.1.6 Socio-Economic Impacts Associated with Lower Harvest Flows 15*
  - *2.1.7 Potential Timber Harvesting Cost Impacts 17*
  - *2.1.8 Summary of Plan Impacts on the Forest Sector 18*
- 2.2 MINERALS AND ENERGY 19
  - *2.2.1 Overview of Mineral Sector 19*
  - *2.2.2 Base Case Management Regime 21*
  - *2.2.3 Morice LRMP Impacts on Mineral Sector 22*
- 2.3 ENERGY 26
- 2.4 AGRICULTURE 27
- 2.5 TRAPPING 29
- 2.6 BOTANICAL FOREST PRODUCTS 30

3 ASSESSMENT OF PLAN IMPACTS ON BACKCOUNTRY TOURISM 32

- 3.1 OVERVIEW OF BACKCOUNTRY TOURISM 32
- 3.2 BASE CASE MANAGEMENT REGIME 32
- 3.3 AREA STATISTICS FOR TOURISM AND RECREATION 33
- 3.4 IMPACTS OF THE MORICE LRMP ON EXISTING BACKCOUNTRY TOURISM 34
  - *3.4.1 Guide-Outfitting 34*
  - *3.4.2 Guided Angling 37*
  - *3.4.3 Other Adventure Tourism 38*
- 3.5 IMPACT OF THE MORICE LRMP ON TOURISM POTENTIAL 40

4 ASSESSMENT OF PLAN IMPACTS ON THE RECREATION SECTOR 42

- 4.1 OVERVIEW OF THE RECREATION SECTOR 42
- 4.2 BASE CASE MANAGEMENT REGIME 43
- 4.3 IMPACTS OF THE MORICE LRMP ON THE RECREATION SECTOR 44

5 ASSESSMENT OF PLAN ON COMMUNITIES/ SETTLEMENTS 47

- 5.1 OVERVIEW OF PLAN AREA COMMUNITIES/ SETTLEMENTS 47
- 5.2 FORESTRY IMPACTS OF MORICE LRMP ON PLAN AREA COMMUNITIES/ SETTLEMENTS 48
- 5.3 OTHER IMPACTS OF THE MORICE LRMP ON PLAN AREA COMMUNITIES/ SETTLEMENTS 51

6 FIRST NATIONS 55
6.1 OVERVIEW OF FIRST NATIONS COMMUNITIES 55
6.2 BASE CASE MANAGEMENT REGIME 56
6.3 MORICE LRMP IMPACTS ON FIRST NATIONS 57
6.3.1 Area Statistics for First Nations Cultural Values 57
6.3.2 Impacts of General Management Direction 58
6.3.3 Impacts of Protected Areas and Area Specific Management Zones 58
7 INTEGRATION OF SOCIO-ECONOMIC AND ENVIRONMENTAL ASSESSMENT 61
7.1 ENVIRONMENTAL RISK ASSESSMENT SUMMARY 61
7.1.1 Ecosystem Representation 61
7.1.2 Risk to Environmental Values 62
7.2 INTEGRATED PERSPECTIVE ON SOCIO-ECONOMIC AND ENVIRONMENTAL IMPACTS 66
8 CONCLUSIONS 70
8.1 NET ECONOMIC VALUE 70
8.2 ECONOMIC DEVELOPMENT 70
8.3 SOCIAL IMPACTS 71
8.4 ENVIRONMENTAL IMPACTS 71

LIST OF TABLES

Table 1 Morice LRMP Resource Management Zones 6
Table 2 Summary Comparison of Consideration of Timber Harvesting Constraints 9
Table 3 Morice LRMP Resource Management Zones and Timber Values 10
Table 4 Socio-Economic Impacts Associated with a Decline in Morice TSA Harvest Flows 15
Table 5 Potential Timber Harvesting Costs from Timber Harvesting 17
Table 6 Morice LRMP Resource Management Zones and Mineral Potential 22
Table 7 Morice LRMP Zones and Mineral Tenures, Exploration and Occurrences 23
Table 8 Potential Employment Impacts from Alienation of Metallic Mineral Potential 24
Table 9 Morice LRMP Area Statistics for Energy Sector 26
Table 10 Morice LRMP Selected Area Statistics for Agriculture 28
Table 11 Target Area of Land Available for Expansion of Agriculture Activities 28
Table 12 Morice LRMP Area Statistics for Tourism and Recreation 34
Table 13 Morice LRMP Management Zones for Guided Angling Rivers and Lakes 38
Table 14 Economic Significance of Recreation Activities in the Morice LRMP Area 42
Table 15 Employment Impacts from Decline in Timber Supply from the Morice LRMP Area 51
Table 16 Impacts of Morice LRMP on Long Term Community Sustainability/Resilience 52
Table 17 Morice LRMP Resource Management Zones and Archaeological Values 57
Table 18 Regional and Morice LRMP Area Ecosystem Representation 62
Table 19 Environmental Risk Assessment Summary 63
Table 20 Morice LRMP Subjective Socio-Economic and Environmental Assessment 67
Table 21 Summary of Morice LRMP Base Case and SEEA 69
Table 22 Population in and Near the Morice LRMP Area 72
Table 23 Income Dependencies in Smithers-Houston 73
Table 24 Wood Products Manufacturing in Houston and Neighbouring Communities 77
Table 25 Employment Coefficients for Morice LRMP Area Timber 79
Table 26 Government Revenues from Morice LRMP Area Timber 80
Table 27 Stumpage Rates for Morice Timber Supply Area, 1997 to 2002 80
Table 28 Average Annual Net Economic Value from Morice LRMP Area Timber 81
Table 29 Morice Area Timber Harvesting Constraints in Timber Supply Review & LRMP 82

Table 30 Incremental Cost Impacts of the Morice LRMP on Timber Harvesting Activities 86
Table 31 Existing and Past Producers in the Morice LRMP Area 92
Table 32 Economic Impacts from the Huckleberry Mine 92
Table 33 Metallic Mineral Potential for the Morice LRMP Area and for B.C 93
Table 34 Mineral Exploration Expenditures for B.C. and Morice LRMP Area 94
Table 35 Socio-Economic Impacts of Beef Production 96
Table 36 Selected Agriculture Statistics by Census Sub-Division for 2001 97
Table 37 Existing and Potential Area for Agriculture 98
Table 38 Estimated Number of Commercial Tourism Operators in Morice LRMP Area 99
Table 39 Summary of Economic Impacts from Backcountry Tourism in Morice LRMP Area 100
Table 40 Total Front-Country, Mid-Country and Back-Country Tourism 100
Table 41 Wildlife Management Units Overlapping Morice LRMP Area 101
Table 42 Estimated Level of Hunting Effort by Non-Residents in the Morice LRMP Area 101
Table 43 Economic Parameters of Guide Outfitting in the Morice LRMP Area 102
Table 44 Guided Days Granted in Morice LRMP Area 103
Table 45 Socio-Economic Impacts of Guided Angling and Associated Services 104
Table 46 Net Economic Value from Guided Angling and Associated Services 105
Table 47 Key Socio-Economic Impacts for Other Backcountry Tourism Operators 106
Table 48 Net Economic Value from Other Adventure Operators in the Morice LRMP Area 106
Table 49 Summary of Impacts from Recreation Activities in the Morice LRMP Area 107
Table 50 Summary Data on Hunting Effort in the Morice LRMP Area 109
Table 51 Level of Hunting Effort by B.C. Residents in the Skeena Region and B.C. 109
Table 52 Level of Hunting Effort in the Morice LRMP Area 110
Table 53 Hunting Effort and Value in WMUs 6-4,6-8,6-9 and 7-27* for Selected Species 111
Table 54 Angling Effort in Morice LRMP Area and Skeena Region 113
Table 55 Economic Impacts of Non-Local Commercial Angling in Morice LRMP Area 113
Table 56 Visits to Parks in and Near the Morice LRMP Area 114
Table 57 1993 Estimates of Recreation Visits to B.C. Parks and Provincial Forests 115
Table 58 Crown Land Recreation Sites and Camping Units in Morice LRMP Area 115
Table 59 Snowmobile Activity in the Morice LRMP Area 116
Table 60 B.C. Parks and Recreation Areas in or Near the Morice LRMP Area 118
Table 61 Selected Economic Impact Data for B.C. Parks and Recreation Areas 119
Table 62 Estimated Harvest from Trapping for the Morice LRMP Area 120
Table 63 Adjusted Base Case Data for Morice LRMP Assessment 128
Table 64 Summary of Estimated Recreation Activity in Morice LRMP Area 129
Table 65 Summary of Base Case SEA Data 130
Table 66 Proportion of Plan Area by Resource Management Zone 131
Table 67 Highlights of Area Statistics for the Morice LRMP Area 134
Table 68 Morice LRMP Area Statistics 135

LIST OF CHARTS

Chart 1 Percentage of Basic Income by Sector for Smithers/ Houston Area 3
Chart 2 Morice LRMP Area as a Percentage of B.C. Forest Sector 8
Chart 3 Morice TSA Harvest Flow Projections 14
Chart 4 Morice LRMP Area Metal Mining Sector as a Percentage of B.C. 19
Chart 5 Metallic Mineral Potential for B.C. and Morice LRMP Area 20
Chart 6 Guide Outfitting and Guided Angling Effort in the Morice LRMP Area 32
Chart 7 Estimated Hunting and Angling Effort by B.C. Residents 43
Chart 8 Unemployment Rates for Smithers/ Houston Area, 1996 and 2001 48
Chart 9 Change in Direct Forest Sector Employment Levels Relative to Base Case 49
Chart 10 Change in Employment in Houston/Granisle Relative to Base Case 49
Chart 11 Change in Houston/Granisle Population Levels by Decade Relative to Base Case 50

LIST OF APPENDICES

APPENDIX 1 DEMOGRAPHIC AND COMMUNITY DATA 72
APPENDIX 2 FOREST SECTOR 76
APPENDIX 3 MINING SECTOR 92
APPENDIX 4 AGRICULTURE SECTOR 95
APPENDIX 5 COMMERCIAL MID-COUNTRY & BACKCOUNTRY TOURISM SECTOR 99
APPENDIX 6 RECREATION SECTOR 107
APPENDIX 7 TRAPPING SECTOR 120
APPENDIX 8 BOTANICAL FOREST PRODUCTS 121
APPENDIX 9 FIRST NATIONS 124
APPENDIX 10 ADJUSTMENTS TO BASE CASE SOCIO-ECONOMIC INFORMATION 127
APPENDIX 11 AREA STATISTICS 131
APPENDIX 12 SELECTED REFERENCES 139

EXECUTIVE SUMMARY

The Morice LRMP area covers approximately 1.5 million hectares in northwest B.C. The intent of the Morice LRMP is to provide strategic direction for the sustainable management of the crown land, and land based resources, in the plan area. The general objectives of an LRMP are:

- To reduce and resolve land use conflicts,
- To ensure sustainable resource management, and
- To provide economic diversity and security.

This socio-economic and environmental assessment assumes that the management objectives and direction outlined in the LRMP can and will be applied and enforced in the LRMP area. No attempt has been made to assess the likelihood or feasibility of implementing management initiatives.

The extent to which the Morice LRMP achieves ecological objectives is summarized in this report, and is explained more thoroughly in a separate Environmental Risk Assessment report.[1]

Overview of the Morice LRMP Area

The Morice LRMP area economy depends very heavily on the forest sector and to a lesser extent on mining, tourism and agriculture. The area supports a broad spectrum of outdoor recreation opportunities, fish and wildlife based tourism, and many forms of hunting and gathering activities. Approximately 5,200 people reside in the plan area, including 3,600 in Houston, 350 in Granisle and the balance in other smaller communities or rural areas. First Nations with an interest in the Morice LRMP area include the Office of the Wet'suwet'en, the Lake Babine Nation, Wet'suwet'en First Nation, Cheslatta First Nation and Yekooche First Nation. The Office of the Wet'suwet'en participated fully throughout the Morice LRMP planning process.

The Morice LRMP enhances certainty of access to crown land resources for each of the various industrial sectors in the plan area while protecting recreation, ecological and cultural heritage values that are important to the region. Key elements of the Morice LRMP and associated socio-economic impacts are described as follows:

Protected Areas

- Proposed protected areas represent 6.4% of the Morice LRMP area, but costs to the industrial sectors will be minimized as these areas cover only 1.4% of the Timber Harvesting Land Base (THLB), no agricultural use areas and one developed mineral prospect.

- Proposed protected areas include more than a quarter of the remaining undeveloped backcountry recreation area and high opportunity tourism areas, as well as significant First Nations cultural heritage sites and values.

No Timber Harvest Areas

- A further 20.4% of crown land will be excluded from timber harvest (including 2.4% of the current Morice LRMP area timber harvesting land base), securing almost all of the remaining undeveloped recreation areas and an additional 48% of the High Tourism Opportunity lands in the Morice plan area. The No Timber Harvest areas will help protect ecological, recreation and First Nations values, without alienating the very high mineral potential in these areas.

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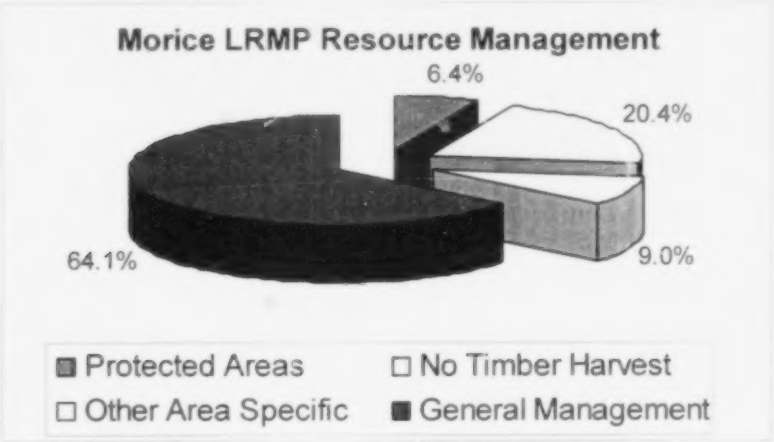
[1] Edie A. and Associates, *Morice Land & Resource Management Plan Environmental Risk Assessment: Morice LRMP Table Final Land Use Recommendation*, June, 2004.

Other Area Specific Management Polygons

- The Morice LRMP provides area specific management direction focusing on recreation, tourism, cultural and ecological values on a further 9.0% of the plan area, covering 11% of the THLB.

General Management Direction

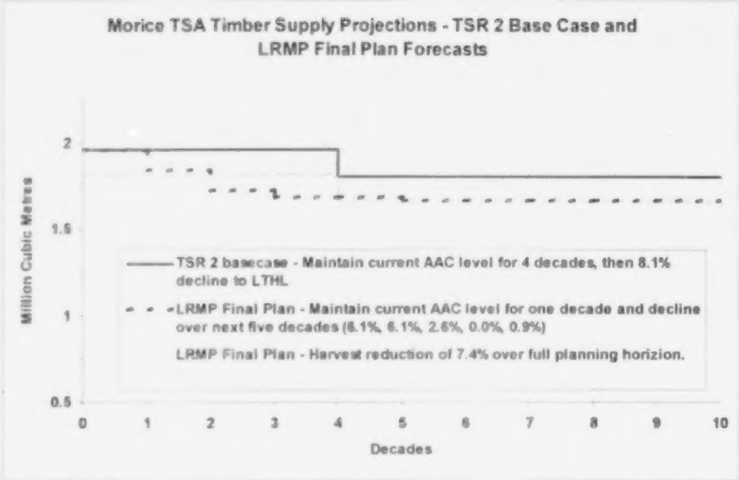
- The Morice LRMP establishes general management direction (GMD) for the full spectrum of plan area resources, to be applied across the entire plan area. The GMD should enhance the security of many of the area's key resource values, through the management of site specific features, access management, ecosystem management measures and consultation. The GMD will likely have some cost implications for some resource development activities.



Forest Sector Impacts

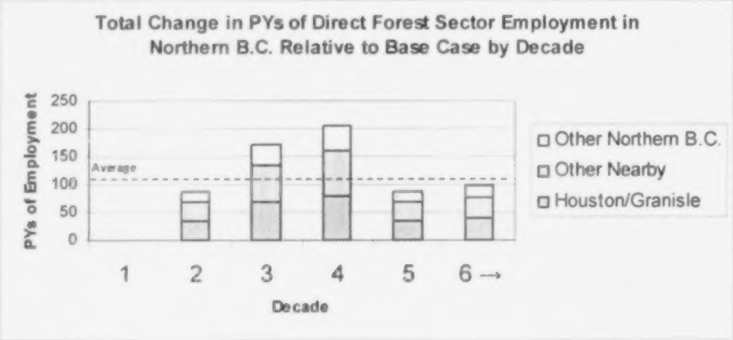
- The benefits of the plan to the forest industry include an increase in land use certainty, and support for forest product certification initiatives.
- Timber harvest modeling simulations indicate a 7.4% decline in annual long term timber harvest levels may be required to implement those aspects of the Morice LRMP that are amenable to modeling.

- Applying MOF harvest flow policy to the downward pressure on timber supply indicates that the AAC can be maintained at the current level for one decade, before beginning a series of stepdowns to a long term level in decade 6 which is 14.9% below the current level, and 7.4% below the TSR2 long term level (TSR2 anticipated an 8.1% 'falldown' from the current AAC to the long term level in the fifth decade).


Morice TSA Timber Supply Projections - TSR 2 Base Case and LRMP Final Plan Forecasts

- The stepdown in stumpage revenues over five decades, which would not begin until the second decade under the MOF harvest flow policy scenario, is equivalent to a loss of $4.1 million per annum starting immediately and continuing indefinitely.

- An average of 108 direct forest industry jobs would be at risk over the first six decades of the harvest flow policy scenario, and 99 thereafter. Following the timber supply impact pattern, the direct job impacts would range from 0 in the first decade to 204 in the fourth decade, relative to base case projections.


Total Change in PYs of Direct Forest Sector Employment in Northern B.C. Relative to Base Case by Decade

Communities

- The plan enhances tourism and recreation values, which should support the marketability and strategic diversification initiatives of Houston, Granisle and other plan area communities. Community capacity building, local empowerment, resource inventory information and stakeholder consensus are key benefits of the planning process.

- The communities in the Morice LRMP area may avoid some of the costs associated with the drop in forest activity, as the two major wood products mills based in Houston are among the largest, most efficient in the province.

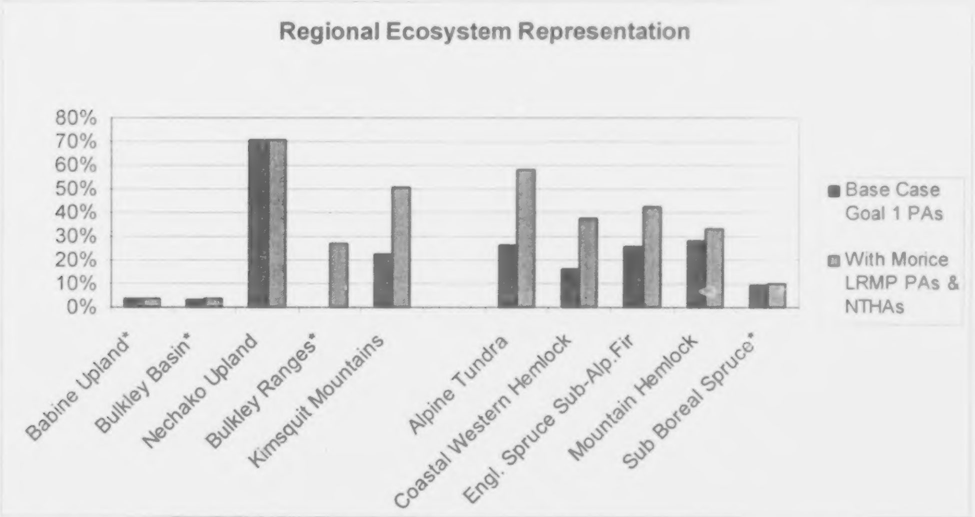
First Nations

The Morice LRMP generally facilitates First Nations economic development strategies in the forest sector, eco-cultural tourism, botanical forest products and backcountry adventure tourism. First Nations will benefit through the protection of cultural heritage resources, as well as any incremental benefits to fish and wildlife populations, and culturally significant ecosystems.

Environmental Values

The Morice LRMP Land Use Recommendation is expected to provide a generally reduced level of risk of serious adverse impacts to many environmental values, compared to base case management.

- Regional ecosystem representation in Protected Areas and No Timber Harvest areas will be enhanced for some ecosections and biogeoclimatic zones, although some of those which are less represented in the base case (Babine Upland, Bulkley Basin and Sub Boreal Spruce) will not receive significant additional representation under the Morice LRMP.



PAs = Protected Areas, NTHAs = No Timber Harvest Areas, * = Under 10% representation in Base Case
For this analysis all parkland forest types are added to the Alpine Tundra category.

- The risk of serious adverse impacts from industrial and recreation activities is expected to be reduced by at least one rating category for several environmental values including ecosystem representation, coarse filter biodiversity, some mountain goat populations, riparian ecosystems, rare ecosystems and aquatic ecosystems. Expected benefits to moose (low risk), grizzly bear (high risk in roaded areas), caribou (risk uncertain), marten (low to moderate risk), fisher (risk uncertain), goshawk (moderate to high risk) and bull trout (risk uncertain) are not expected to be sufficient to result in a change in risk profile for these focal species in the Morice LRMP area.

Environmental Risk Assessment

Ecological Objective Category	Base Case Risk Level	Morice LRMP Risk Level
Ecosystem Representation	High Risk	Moderate to High Risk
Coarse Filter Biodiversity	High in Areas developed for forestry	Moderate to High in areas developed for forestry
Focal Species		
Grizzly Bear	High in roaded areas; Low to Moderate in unroaded areas	High in roaded areas; Low to Moderate in unroaded areas*
Northern Caribou	Uncertain; depends mostly on predation	Uncertain; depends mostly on predation
Fisher	Uncertain; lack of information on local populations	Uncertain; lack of information on local populations
Northern Goshawk	Moderate to High	Moderate to High
Mountain Goat	Low for most populations; Moderate to High for small isolated populations	Low for most populations; Moderate to High for small isolated populations
Moose	Low	Low
Marten	Low to Moderate	Low to Moderate*
Bull Trout	Uncertain	Uncertain*
Riparian Ecosystems	Uncertain	Low to Moderate
Rare Ecosystems	High	Moderate
Aquatic Ecosystems and Fish Habitat	Uncertain	Low to Moderate

* = small improvement in risk level but not sufficient to alter rating

▨ = significant improvement in risk level

Net Economic Value

From a Net Economic Value perspective, the costs related to changes in forest industry activity (equivalent to $4.2 million per annum on a net present value basis excluding a potential $1 million in additional harvesting costs) and mining industry activities ($0.1 million per annum) are balanced against benefits associated with maintaining or expanding recreation value, backcountry tourism, botanical forest products, agriculture and trapping. The sectors and activities that are expected to experience net economic benefits (with the exception of recreation) are currently very small in terms of their contribution to the flow of net economic value from the Morice LRMP area. Benefits to these sectors are likely to occur over a long time horizon, and are unlikely to offset the costs incurred from changes in forest industry activity, which are expected to begin one decade from now.

The Net Economic Value accounting is incomplete, however, as it does not include externalities arising from forestry and mining sector activities. Concerns expressed by planning table representatives, as well as the base case environmental risk assessment for the Morice LRMP, indicate that there are negative externalities associated with the base case rates and methods of timber harvesting, and potential mining activities. The extent to which these negative externalities will be reduced by Morice LRMP management direction should be set against the raw Net Economic Value cost implications. While we have been unable to quantify either the base case level of these externalities, or the extent of their potential amelioration through LRMP initiatives, there is some expression of this amelioration in the benefits noted to other sectors and interests, as well as environmental values.

The following two tables present in tabular format the key elements of the plan and their impacts on each sector, interest group or value. The first table summarizes a subjective assessment of plan impacts, while the second presents a more quantitative perspective on expected impacts. Following those two tables is a more detailed summary of the key features of the plan, and the socio-economic and environmental impacts of the plan on industry sectors, social values and environmental values.

Environmental Risk Assessment

Ecological Objective Category	Base Case Risk Level	Morice LRMP Risk Level
Ecosystem Representation	High Risk	**Moderate to High Risk**
Coarse Filter Biodiversity	High in Areas developed for forestry	**Moderate to High in areas developed for forestry**
Focal Species		
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Fisher	Uncertain, lack of information on local populations	Uncertain, lack of information on local populations
Northern Goshawk	Moderate to High	Moderate to High
Mountain Goat	Low for most populations; Moderate to High for small isolated populations	**Low for most populations; Moderate to High for small isolated populations**
Moose	Low	Low
Marten	Low to Moderate	Low to Moderate*
Bull Trout	Uncertain	Uncertain*
Riparian Ecosystems	Uncertain	**Low to Moderate**
Rare Ecosystems	High	**Moderate**
Aquatic Ecosystems and Fish Habitat	Uncertain	**Low to Moderate**

* = small improvement in risk level but not sufficient to alter rating
▨ = significant improvement in risk level

Net Economic Value

From a Net Economic Value perspective, the costs related to changes in forest industry activity (equivalent to $4.2 million per annum on a net present value basis excluding a potential $1 million in additional harvesting costs) and mining industry activities ($0.1 million per annum) are balanced against benefits associated with maintaining or expanding recreation value, backcountry tourism, botanical forest products, agriculture and trapping. The sectors and activities that are expected to experience net economic benefits (with the exception of recreation) are currently very small in terms of their contribution to the flow of net economic value from the Morice LRMP area. Benefits to these sectors are likely to occur over a long time horizon, and are unlikely to offset the costs incurred from changes in forest industry activity, which are expected to begin one decade from now.

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Summary of Subjective Socio-Economic and Environmental Assessment

Morice LRMP Socio-Economic and Environmental Impact Assessment (relative to Base Case or 'status quo' management scenario)		Forestry	Mining	Agriculture	Energy	Guiding/Trapping	Botanicals	Tourism	Recreation	Communities	First Nations	Ecosystem Representation	Coarse Filter Biodiversity	Focal Wildlife Species	Special and Rare Ecosystems	Aquatic Ecosystems and Fish
General Plan and Planning Process Products	land use certainty, resource inventory data and maps, community capacity building, stakeholder consensus	b	b	b		b	b	b	b	b	b	b	b	b	b	b
General Management Direction	Management Objectives															
General	noxious weeds, fertilizer use, point source pollution	b/c		b/c			b	b/c	b/c							
Consultation	consistency of operational decisions with LRMP direction	b/c	b/c	b	b/c	b	b	b	b	b	b/c					
Community	air quality, community stability, heritage, recreation, visual	c	c			b		b	b	b	b	b	b	b		
Economy	access management, specific sectoral objectives	c	b/c	b		b	b	b	b	b/c	b		b			
Ecosystem	biodiversity, fish and wildlife, aquatic resources	■	c	b/c	c	b	b	b/c	b/c		b	b	B	B	B	B
	Management Objectives															
Protected Areas	recreation, ecological, tourism, cultural heritage values	c	c			b	b	b/c	b/c		b	B	b	b	b	b
Area Specific Management	Management Objectives															
No Timber Harvest Areas	recreation, ecological, tourism, cultural heritage, water resources	c	c			b	b	b	b		b	B	b	b	B	B
Other Area Specific	recreation, ecological, tourism, cultural heritage, water resources	■	c	c		b	b	b	b		b	b	b	b	b	b

Legend: c = modest costs, C = significant costs, b = modest benefits, B = significant benefits b/c = a mix of costs and benefits, * = not modelled in SELES simulation

Summary of Subjective Socio-Economic and Environmental Assessment

Morice LRMP Socio-Economic and Environmental Impact Assessment

(relative to Base Case or 'status quo' management scenario)

		Forestry	Mining	Agriculture	Energy	Guiding/Trapping	Botanicals	Tourism	Recreation	Communities	First Nations	Ecosystem Representation	Coarse Filter Biodiversity	Focal Wildlife Species	Special and Rare Ecosystems	Aquatic Ecosystems and Fish
General Plan and Planning Process Products	land use certainty, resource inventory data and maps, community capacity building, stakeholder consensus	b	b	b		b	b	b	b	b	b	b	b	b	b	b
General Management Direction	Management Objectives															
General	noxious weeds, fertilizer use, point source pollution	b/c		b/c			b	b/c	b/c							
Consultation	consistency of operational decisions with LRMP direction	b/c	b/c	b	b/c	b	b	b	b	b	b/c					
Community	air quality, community stability, heritage, recreation, visual	c	c			b		b	b	b	b	b	b	b		
Economy	access management, specific sectoral objectives	c	b/c	b		b	b	b	b	b/c	b		b			
Ecosystem	biodiversity, fish and wildlife, aquatic resources	■	c	b/c	c	b	b	b/c	b/c		b	b	B	B	B	B
	Management Objectives															
Protected Areas	recreation, ecological, tourism, cultural heritage values	c	c			b	b	b/c	b/c		b	B	b	b	b	b
Area Specific Management	Management Objectives															
No Timber Harvest Areas	recreation, ecological, tourism, cultural heritage, water resources	c	c			b	b	b	b		b	B	b	b	B	B
Other Area Specific	recreation, ecological, tourism, cultural heritage, water resources	■	c	c		b	b	b	b		b	b	b	b	b	b

Legend: c = modest costs, C = significant costs, b = modest benefits, B = significant benefits b/c = a mix of costs and benefits, * = not modelled in SELES simulation

Summary of Morice LRMP Economic Base Case and SEEA

Economic Impacts	Base Case					Morice LRMP Impacts
	Direct PYs of Employment		Direct GDP ($ Million)	B.C. Direct Government Revenues ($ Million)	B.C. Net Economic Value ($ Million)	
	Morice LRMP Area	B.C.				
Sectoral Data:						
Forestry (AAC excl. Woodlots)	1,018	1,442	$198.08	$89.05	$66.51	- Certainty benefits - Net economic value loss equivalent to $4.2 million per year excluding $1 million in potential additional harvesting costs; - No jobs lost in decade 1; over 6 decades, average loss of 108 direct FTEs in forest sector
Huckleberry Mine	82	215	$38.95	$1.90	$1.65	No impact
Agriculture	20	20	$0.89	$0.05	$0.06	B
Backcountry Tourism:						
Guide Outfitting	21	21	$0.64	$0.08	$0.16	B
Guided Angling	13	13	$0.94	$0.09	$0.19	B
Other Commercial Tourism	9	9	$0.38	$0.05	$0.05	B
	43	43	$1.96	$0.21	$0.41	
Other Industrial Sectors:						
Mineral Exploration	- ARIS 1970-2002 expenditures: $2 million/yr ($2002), 4.3% of B.C. exploration expenditures					- Certainty benefits - Alienating 5.2% of high metallic potential may translate to loss of $0.1 million in annual net economic value and an average of 10 direct FTEs per year
Oil & Gas	- No existing activity - some potential					No impact
Hydro-electric	- Nechako reservoir system, potential run of river projects					C
Botanical Forest Products	- Limited existing activity - some potential					B
Trapping	- 62 territories; total average annual revenues of $90,000 for Morice LRMP area					B
Recreation Values	- Various estimates - some $50 range; others $10 to $20 range - estimated 100,000 recreation days				$1 million to $5 million	B
Social and Environmental Impacts	Morice LRMP Impacts					
Community Sustainability/Resilience	- Impacts of employment declines (beginning in decade 2) from decreased forest industry activity - Benefits to ecological integrity, civic vitality, economic diversity and recreation opportunities					B/C
First Nations	- Benefits to cultural heritage, botanical forest products, culturally significant ecosystems					B
Environmental Values	- Increased ecosystem representation in Protected Areas and No Timber Harvest areas - Reduced risk to coarse filter biodiversity in area developed for forestry - Reduced risk to some mountain goat populations, riparian ecosystems, rare ecosystems and aquatic ecosystems - Less significant benefits to grizzly bear, marten, moose, and bull trout					B

Summary of Socio-Economic Impacts

	Base Case	Morice LRMP – Final Scenario
Key Elements of the Morice LRMP		
Protected Areas	- Less than 600 hectares; or 0.04% of plan area	- 96,246 hectares, 6.4% of landbase. - Nanika Kidprice: 55% (52,824 ha) - Burnie Shea Lakes: 35% (33,963 ha) - Babine Lake Marine Parks: 6% (5,760 ha) - Other: 4%
No Timber Harvest Areas	- The Base Case does not have any large No Timber Harvest areas	- 306,916 hectares; 20.4% of landbase - Tahtsa-Troitsa: 53% (164,420 ha) - Morice Lake: 35% (108,359 ha) - Other: 12%
Other Area Specific	- Minimal area under Base Case. - Morice LRUP Zone A protects Morice River corridor, also, other small areas to protect other values	- 135,582 hectares; 9.0% of landbase - High biodiversity emphasis areas: 6.2% of plan area and 8.9% of forested area
	- Telkwa Caribou Recovery Area establishes measures that minimize disturbances to caribou. This includes establishing restrictions on timber harvesting activity and designating areas that are non-motorized for summer and/or winter recreational use over 74,000 hectares	- Telkwa Caribou Recovery Area remains the same but some of the PAs and Morice LRMP Area Specific Management zones overlap the Telkwa Caribou Recovery Area.
Scenic Areas	- Scenic areas represent approximately 733,000 hectares (49% of the landbase) of which 523,500 hectares (71%) require high management consideration, and the balance or 210,000 hectares require medium or low consideration	- Morice LRMP proposes to augment the size of Scenic Areas to 936,000 hectares (62% of the landbase), of which 670,500 hectares will require the highest level of management consideration (72%)
	- Approximately 273,000 hectares (18% of the landbase) are classified under specific Visual Quality Objectives (VQOs)	- VQOs have not yet been established for the Morice LRMP designated scenic areas
Forest Sector	- AAC: 1,961,117 m3 - Billed volumes between 1997 and 2002 are 2.2 million m3 - The benchmark 2002 Ministry of Forests Timber Supply Review (TSR2) base case timber supply projection for the Morice TSA projected that the current AAC could be maintained for 4 decades before declining by 8.1% in the fifth decade to the Long Term Harvest Level of 1.80 million m^3 (referred to hereafter as the 'falldown') - MOF harvest flow policy requires the current AAC to be maintained for as long as possible (to minimize short-term impacts), while limiting the harvest declines between decades to less than 10%, and maintaining the harvest level always at or above the long-term level.	- Morice Landscape Model (MLM) indicates that long term timber harvesting activity may have to drop by 7.4% to accommodate the Morice LRMP management direction and proposed protected areas - Applying MOF harvest flow policy to the downward pressure on timber supply indicates that the AAC can be maintained at the current level for one decade, before beginning a series of stepdowns to a long term level in decade 6 which is 14.9% below the current level, and 7.4% below the TSR2 long term level (TSR2 anticipated an 8.1% 'falldown' from the current AAC to the long term level in the fifth decade) - 1.9% of the 7.4% impact results from alienation of 3.7% of THLB.
	- Morice LRMP area accounts for 1.6% of landbase of B.C., but 3% of B.C.'s THLB and 4% of provincial stumpage revenues ($64 million based on 1997 to 2002 average)	- The stepdown in stumpage revenues over five decades, which would not begin until the second decade under the MOF harvest flow policy scenario, is equivalent to a loss of $4.1 million per annum starting immediately and continuing indefinitely (based on average rate over 1997 and 2002 of $32.61 per m3 after accounting for inflation)

	Base Case	Morice LRMP – Final Scenario
	- The forest sector accounts for 57% of after tax income in Houston, 56% for the Morice LRMP area (including Houston and Granisle), and 34% in Smithers/Houston (including the Morice LRMP area, Smithers and Telkwa) - The Morice AAC generates 1,018 direct FTEs in the Morice LRMP area.	- An average of 108 direct forest industry jobs would be at risk over the first six decades of the harvest flow policy scenario and 99 thereafter. Following the timber supply impact pattern, the direct job impacts would range from 0 in decade 1 to 204 in decade 4. - 78% of the direct job impacts are likely to be felt in the Smithers/Houston area and nearby communities (mainly harvesting, silviculture and wood products processing). - 22% of direct job impacts are likely to be felt in other Northern Interior communities (mainly pulp and paper processing).
	- Timber harvesting practices follow the Forest Practices Code, and its successor the Forest and Range Practices Act.	- Licensees estimate that management direction in the Morice LRMP may lead to increased harvesting costs of approximately $0.50 per m3 in the Morice TSA, or an additional decline in government stumpage revenues of $1 million (about 1.5% of annual Morice TSA stumpage). MoF staff believe this estimate may be high.
Metallic Minerals	- Huckleberry Mine (1997 to present) employs approximately 215 people and generates $39 million in annual GDP and $1.9 million in annual government revenues (half in direct corporate taxes and half in income taxes).	- The Morice LRMP will not impact Huckleberry Mine.
	- Mining and mineral exploration activities have been substantial and significant in the Morice LRMP area with 14 past producing metal mines including 4 major producers.	- The Morice LRMP will provide greater land use certainty to mineral development companies.
	- The Morice LRMP area is provincially significant for metallic minerals, accounting for 2.3% of B.C.'s mineral tenures, 4.3% of B.C.'s exploration expenditures and 3.7% of the High and Moderate to High metallic mineral potential in B.C. (compared to 1.6% of the B.C. landbase).	- Proposed Protected Areas (PAs) will alienate 5.2% of the High metallic mineral potential and 7.9% of the Moderate to High mineral potential. - It is difficult to assess the value of the metallic mineral potential in the PAs, but the alienation of those lands represents 0.25% of the 38 million hectares of High and Moderate to High metallic mineral potential in B.C. - 0.25% of B.C.'s metal mining sector translates to approximately 10 direct PYs and $0.6 million in annual wages and salaries. - The PAs include one developed prospect – the New Nanik copper deposit, a 16.5 million tonne copper deposit on the western shore of Nanika Lake. Recent tenures associated with this prospect have lapsed and/or been abandoned.
Energy Sector	- There is currently no oil and gas drilling in the Morice LRMP area. 60% of the landbase has no oil and gas potential, 31% has poor oil and gas potential, and only 9% is rated as having moderate or high oil and gas potential.	- The proposed Protected Areas include none of the oil and gas potential that is rated high and only 1% of the oil and gas potential that is rated as moderate.
	- The Morice LRMP area includes an important portion of the Nechako reservoir created as part of the Kemano project.	- The Morice LRMP should not have an impact on the operations of the Nechako Reservoir.
Agriculture	- The agriculture and food manufacturing sector (including fish hatcheries and fish processing) account for 2% of basic after-tax income in the Morice LRMP area generating an estimated 100 direct, indirect and induced jobs. Cattle ranching dominates the farming sector, involving over 130 people and generating 20 direct FTEs, annual sales of $4 million, range fees of $36,000 and annual wages and salaries of $0.5 million. - The Morice LRMP area accounts for 1.8% of all Crown rangeland forage production (AUMs) in B.C.	- There are no range tenures, agricultural leases or Agriculture Land Reserve lands in the proposed Protected Areas. - The Morice LRMP benefits the cattle ranching sector by targeting 22,500 hectares of additional Crown land to be allocated to agriculture activities, provided that agriculture is the highest and best use of the land. - Morice Landscape Model sensitivity analysis of agriculture expansion impacts on timber supply indicates that it will be difficult to achieve the maximum agriculture lands expansion without significant impacts on timber supply (up to 1% reduction in long term timber supply).

	Base Case	Morice LRMP – Final Scenario
Trapping	- The Morice LRMP area generates annual revenues of approximately $87,000 (based on average reported harvest for the Morice LRMP area)	- The Morice LRMP will benefit the trapping sector mainly through any benefits to wildlife and wildlife habitat. Access management provisions may also benefit some trapping territories.
Botanical Forest Products	- The botanical forest products sector is not regulated and provides no direct public sector rent in the form of royalties or other direct revenues to the Crown. - The Office of the Wet'suwet'en is developing a berries management plan, which aims to re-establish and enhance huckleberry production to provide for traditional use and commercial sales.	- The Morice LRMP recognizes the importance of botanical forest products to all local residents for personal use and consumption, and makes provisions to maintain or enhance the production of botanical forest products. - While the Morice LRMP may benefit the development of botanical forest products, thereby providing significant heritage, cultural and personal value, the economic impacts are likely to be minimal to the local communities and to the province.
Backcountry Tourism	- The Morice LRMP area accounts for 2.1% of B.C.'s guided hunting days, 3.2% of B.C.'s guided hunting clients and 4.7% of guided angling days in B.C., compared to the Morice region's 1.6% of the total B.C. landbase. - Guide-outfitting, guided angling and other commercial backcountry tourism generate an estimated 43 direct FTEs in the Morice LRMP, industry revenues of $4.7 million, direct GDP of $2.0 million, and direct government revenues of $0.2 million.	- The Morice LRMP is expected to have a positive impact on backcountry tourism through GMD that is aimed at maintaining tourism and recreation values such as facilities, features and trails functionality, as well as scenic areas.
Guide Outfitting	- There are 9 guide-outfitters with territories that overlap the Morice LRMP boundaries with three of these having a base or satellite camp in the area. - Guide-outfitting activities in the Morice LRMP area generate an estimated 21 direct FTEs. - The growth potential for guide-outfitting is limited by preferred wildlife species populations, and future revenue growth may come more from increasing the value of the experience. There is growth potential in the non-hunting product.	- The Morice LRMP will have a very positive impact on existing guide-outfitting operations. - Wildlife habitat management and biodiversity conservation measures should help to maintain wildlife populations. - One guide-outfitter's territory includes the Nanika-Kidprice PA, and another includes the Burnie-Shea Lakes PA. These two guide-outfitters will have continued motorized access to support guiding operations in these two PAs. - Motorized access will be restricted in the Atna Lake Ecological Reserve, but this area is only 973 hectaras. - If guide-outfitting operations grow through the non-hunting product portion of their business, access provisions that do not conform to the area specific restrictions on recreation activities may become an issue.
Guided Angling	- There are 19 guides operating on the major rivers and lakes in the Morice Area, and an additional 7 angling guides that operate over the length of the Bulkley River (based on 1998/1999 data). - Guided angling in the Morice LRMP area provides 13 FTEs of direct employment.	- The Morice LRMP establishes Area Specific Management (ASM) zones and protected areas (PAs) along all the rivers and lakes in the Morice LRMP that are Classified Waters, and where guided angling takes place, except for Babine Lake where the Morice LRMP established various marine parks. - The Morice LRMP provides direction for the development of a Lakeshore Management Strategy. - Improved management of riparian ecosystems and aquatic habitat should help maintain fish populations.
Adventure Tourism	- In addition to guide-outfitting and guided angling, there are another 5 or 6 commercial tourism operations that offer backcountry multi-day tours in the Morice LRMP area (backcountry skiing, snowmobiling tours, canoeing/kayaking, hiking, trail riding, etc.). - These generate 9 FTEs of direct employment.	- The Morice LRMP will benefit the adventure backcountry tourism sector. - The proposed PAs and No Timber Harvest areas include 78% of the High Tourism Opportunity areas. - All tourism facilities will benefit from the GMD guidelines for Scenic Areas. - Additional restrictions on motorized recreation uses will likely benefit the adventure backcountry tourism sector.

	Base Case	Morice LRMP – Final Scenario
Tourism Potential	- Identified opportunities for backcountry tourism development include the development of cultural/historical winter adventure tours, a hut system, lake tours, destination lodges and freshwater-non-motorized canoeing and rafting activities.	- The Morice LRMP proposes various PAs, No Timber Harvesting areas and ASM zones that will allow areas that are particularly suitable for tourism activities to develop in the future. How much of this potential will be realized will depend on markets and other factors.
Recreation	- Morice LRMP area provides a wide range of backcountry activities including steelhead and freshwater angling on the world renowned Bulkley and Morice Rivers; boating and/or swimming on Babine Lake, the Nanika-Kidprice chain of lakes, and many others; resident hunting; as well as hiking, horseback riding, snowmobiling and backcountry skiing. - In the provincial context, the region accounts for 1.1% of B.C.'s freshwater angling days but 4.8% of steelhead angling days, and for 2.1% of B.C.'s resident hunter days. - The Morice LRMP area sponsors an estimated 100,000 days a year of backcountry recreation (excluding visits to local lakes for boating, swimming and other front country activities). - The Granisle and Houston Community Recreation Forests both provide trails for horseback riding, mountain biking walking, hiking and cross country skiing.	The Morice LRMP will have a positive impact on recreation: - GMD should help protect wildlife habitat and wildlife populations. - All Classified Waters are in PAs or Area Specific Management zones. - Of the 25 MOF recreation sites, 11 will be in PAs or in area specific management zones. - The Nanika-Kidprice chain of lakes and trails will be included in a large protected area. - The Morice LRMP provides management direction to maintain the functional integrity of features (200 metres), facilities (500 metres) and trails (200 metres each side). - The Grease Trail between Fort Babine and Talkla Lake will be further protected with a 100 metre No Timber Harvest buffer on either side of the trail, and a 70% mature forest retention direction between 100 metres and 500 metres on either side of the trail. - Snowmobiling (some 12,000 visitor days per year) will not be significantly impacted by motorized recreation restrictions as popular areas such as the Telkwa range, the Dungate area, the Sibola range and the Topley Granisle trail network will remain mainly open to motorized activities in winter. Some areas in the Telkwa Mountains will be non-motorized throughout the year, but most of those areas were already designated non-motorized under the Telkwa Caribou Recovery Plan.
Access Management	- The Telkwa Caribou Recovery Area Base Case restricts motorized recreational activities on 52,461 hectares in the summer (3.5% of landbase) and 44,547 hectares in winter (3.0% of landbase). - In particular, the Telkwa Caribou area designated the polygons 9B (Starr Creek) as non-motorized (all season), 9D as non-motorized restricted public access, and 9C as non-motorized in the summer. - There are also motorized restrictions in the Houston Community Recreation Forest.	- The access management plan for motorized and non-motorized recreation activities will benefit backcountry recreation users. - Under the Morice LRMP, 6.1% of the landbase will be non-motorized in all seasons (22% of this will be in PAs, 29% in No Timber Harvest and other ASM zones and 49% in GMD). - An additional 0.6% will be non-motorized in winter only. - An additional 12.5% will be non-motorized in summer and a further 6% will have motorized activities restricted to hard surfaces during summer, bringing to 24.6% the area where motorized activities will be restricted.
Communities and Settlements	- Approximately 5,200 people reside in the Morice LRMP area: Houston (3,600 residents), Granisle (350 residents), Topley, Topley Landing, Tatchet and rural population (remaining 1,250 people). - Other nearby communities that depend on the Morice LRMP area resources include Smithers, Telkwa and Burns Lake, having a combined population of 8,727 people. - The Morice LRMP area derives 56% of its income from the forest sector (57% for Houston alone), 7% from mining, 2% from tourism, and 2% from	- Community capacity building, local empowerment, resource inventory information and stakeholder consensus are key benefits of the LRMP to plan area communities. - Under the harvest flow policy scenario for timber supply over the next 6 decades, there would be no employment loss in Houston/Granisle in decade 1. Employment levels would then be lower than under the Base Case by 45 direct, indirect and induced PYs of employment in decade 2, 88 PYs in decade 3 and 105 PYs in decade 4 (this compares to an average of 56 PYs if harvest flows were

	Base Case	Morice LRMP – Final Scenario
	agriculture and food. The public sector, which partly depends on the population base and local economy, accounts for 12% of income, and other sectors, transfer payments and pensions account for the balance of 21%. • The two sawmills in Houston process 1.5 times more wood than is harvested from the Morice LRMP area (the Canfor sawmill is the world's largest softwood sawmill and Houston Forest Products (West Fraser/Weldwood) is the sixth largest sawmill in B.C.). By-products from those mills are utilized by other mills in Houston and other Northern Interior communities. • Under the Base Case, employment from the Morice LRMP would be maintained for 5 decades and then fall by 8.1% assuming a proportional change from the expected 'falldown'.	constant throughout the 6 decades). • The corresponding negative impact on population levels for Houston/Granisle ranges between 0 in Decade 1 and 198 people in Decade 4, for an average of 105 people throughout the 6 decades (2% of current population). • This assumes that the loss of wood processing employment would be felt in other nearby communities rather than in Houston. Impacts would be greater if the loss of wood processing jobs associated with reduced timber supply occurs in Houston (up to 7% of the Houston/Granisle labour force). • The Morice LRMP will benefit the tourism sector, but a doubling in existing backcountry tourism activities would be required by decade 2 to offset the minimum loss of 45 FTEs in Houston/Granisle that could result from the decline in timber supply. By decade 3, the backcountry tourism sector would have to be approximately 3 times greater than what it is today to offset the decline in forest sector employment projected for that decade. • Impacts on community resilience are mixed, with benefits such as greater ecological integrity, greater economic diversity, greater local governance and the maintaining of recreation values, counterbalancing the socio-economic costs associated with the jobs at risk.

First Nations	• Five First Nations have declared interests in traditional territories in the Morice LRMP area under the tripartite treaty negotiation process: Lake Babine (Nat'oot'en); Office of the Wet'suwet'en; Carrier-Sekani; Cheslatta Carrier and Yekooche. The Office of the Wet'suwet'en has been a full participant in the Morice LRMP planning process.
	• The Bulkley Nechako Regional District includes approximately 41,000 people of which approximately 6,000 are of First Nations ancestry.
	• First Nations with an interest in the Morice LRMP area are increasingly active in the forest industry and are pursuing eco-cultural tourism opportunities. First Nations have a vital economic and cultural interest in salmon populations and fish habitat in the Morice LRMP area, in wildlife populations supporting hunting and trapping activities, as well as in botanical forest products and culturally significant ecosystems.
	• First Nations concerns which may be addressed by the Morice LRMP include:
	  ◦ The rate of road development and timber harvesting
	  ◦ Degradation or destruction of cultural heritage sites
	  ◦ Degradation of culturally significant ecosystems/ botanicals
	  ◦ Degradation of fish and wildlife habitat
		• First Nations values, interests and aspirations should be better accommodated by the Morice LRMP than by base case management.
		• Cultural Heritage GMD reinforces the base case conservation of archaeological sites and cultural heritage resources. Other GMD that will benefit First Nations pertains to botanical forest products, consultation, recreation and ecosystems.
		• The objectives for the proposed PAs to maintain and protect cultural heritage values, recognize hunting and angling as acceptable use, and encourage economic opportunities for small commercial backcountry tourism ventures, are consistent with First Nations values and concerns.
		• Many of the ASM zones provide specific management direction for First Nations cultural heritage values, while others are managed for high biodiversity, seral stage and access restrictions, which are also consistent with First Nations values and concerns.
		• There are 22 Wet'suwet'en house territories that are substantially within the Morice LRMP area. The Morice LRMP PAs and ASM zones provide a high degree of protection (additional to GMD) for cultural heritage values in 7 of these house territories, and a moderate degree of protection in another 5. Moreover, each Wet'suwet'en clan has at least one house territory that has a high degree of additional protection of cultural heritage values.

	Base Case	Morice LRMP – Final Scenario
Provincial Government Revenues	• On average (1997 to 2002), the Morice AAC has generated $89.1 million in annual direct provincial government revenues including stumpage ($64 million), other forest industry taxes ($14.7 million) and employee personal income taxes ($10.5 million). • Huckleberry Mine generates approximately $2 million in direct government revenues. • Direct government revenues from backcountry tourism add to $0.4 million and agriculture to $0.06 million.	• The stepdown in stumpage revenues over five decades, which would not begin until the second decade under the MOF harvest flow policy scenario, is equivalent to a loss of $4.1 million per annum starting immediately and continuing indefinitely. • Licensees estimate that the Morice LRMP may lead to increased harvesting costs, which may further reduce stumpage revenues by $1 million per year (about 1.5% of Morice TSA stumpage revenues). MoF staff believe this estimate may be high.
Provincial Net Economic Value	• The Net Economic Value (also called net Resource Value or Economic Rent) estimates the net benefits gained from resource extraction and consumer surplus gained from the use and existence of a certain good, service or resource, over an above the production costs for obtaining the resource. • The commercial sectors in the Morice LRMP area generate $68.6 million in Net Economic Value, of which $64 million is stumpage revenues from the forest sector. • The consumer surplus associated with recreation values in the Morice LRMP area is estimated to range between $1 million and $5 million for 100,000 recreation days.	• The stepdown in net economic value from the forest industry over five decades, which would not begin until the second decade under the MOF harvest flow policy scenario, is equivalent to a loss of $4.2 million per annum starting immediately and continuing indefinitely. • Licensees estimate that management direction in the Morice LRMP may lead to increased harvesting costs of about $0.50 per m3, or an additional decline in annual net economic value of some $1 million. MoF staff believe this estimate may be high. • Net economic value accounting for the forest industry is incomplete, as it should be offset by any decline in the negative externalities caused by base case harvesting rates and practices. • To offset the decline in forest industry activity would require the equivalent of almost 3 new mines the size of Huckleberry Mine. Alternatively, the backcountry tourism sector would be required to grow by approximately 10 times. • A five-fold increase in backcountry recreation days could also potentially offset the drop in net economic value from forestry (based on the consumer surplus averaging $10 per recreation day).

Summary of Environmental Impacts

Environmental Value	Base Case Management	LRMP Management
Ecosystem Representation	• < 0.1% of the Plan Area in Protected areas • 0.5% of the Plan Area in No Harvest areas *High Risk*	• 6.4 % of the Plan Area in Proposed Protected Areas • 20.4% of the Plan Area in Proposed No Harvest Areas *Moderate to High Risk*

Environmental Value	Base Case Management	LRMP Management
Coarse Filter Biodiversity	• no new Protected Areas • less old forest on managed landscape • 7.25% retention of Wildlife Tree Patches in logged blocks	• New Proposed Protected Areas or No Harvest Areas over 27% of the Plan Area • High Biodiversity Areas over a further 6.2% of the Plan Area (8.9% of forested area) • Wildlife Tree Patch retention of an area equivalent to 7.25% of all logged blocks, plus temporary retention of additional unlogged forest on large cutblocks • Extended rotation on a portion of large cutblocks • Development and implementation of Best Management Practices for Coarse Woody debris • Retention of the deciduous component of managed forests • Development of Best Management Practices for management of tree species diversity • Use of natural regeneration on a portion of logged land
	Overall Risk: High in areas developed for forestry	Overall risk: Moderate-High in areas developed for forestry.
Grizzly Bear	No specific management of habitat availability or access-related mortality. Overall decline in suitability and value of seasonal habitats as a result of timber harvest.	• Checking for spring and salmon foraging sites during lower level planning • Limitations to timber harvest near identified spring and salmon foraging sites • Development and implementation of strategies for managing access related mortality • Inclusion of some important grizzly bear habitat within Proposed Protected Areas or No Harvest Areas • Overall decline in suitability and value of seasonal habitats as a result of timber harvest, but slightly less decline than under Base Case
	Overall risk: High in roaded portions of Plan Area, Low-Moderate in remote unroaded portions.	Overall risk: High in roaded portions of Plan Area, Low-Moderate in remote unroaded portions, however generally lower risk than under Base Case Management.
Northern Caribou	Limited timber harvest in Telkwa herd habitat.	• Limited timber harvest in Telkwa and Takla herd habitats. • Checking for summer and calving habitats during lower level planning • Limited timber harvest near identified summer and calving habitats
	Overall risk: Uncertain as it will likely depend on long term predation trends.	Overall risk: Uncertain as it will likely depend on long term predation trends.
Fisher	No specific provisions.	• Protection of den trees. • Inclusion of potentially important riparian habitats in Morice River No Harvest Areas. • Better management of deciduous forests important to this species.
	Overall Risk: Uncertain due to lack of information on local populations.	Overall Risk: Uncertain due to lack of information on local populations.
Northern Goshawk	Due to timber harvest, general reduction in habitat likely to be occupied.	• Due to timber harvest, general reduction in habitat likely to be occupied. • Protection of known nest/fledging sites • Inclusion of habitat in Protected and No Harvest Areas.
	Overall Risk: Moderate-High	Overall Risk: Moderate-High
Mountain Goat	No specific provisions.	• Access controls near isolated populations. • Limited timber harvest in important shelter habitats. • Inclusion of habitat in Protected and No Harvest Areas. • Reduced risk of disease transfer from domestic animals.

Environmental Value	Base Case Management	LRMP Management
	Overall risk: Low for most populations, Moderate-High for small isolated populations near Morice and Nadina Mountains	Overall Risk: Low for most populations. Moderate for small isolated populations near Morice and Nadina Mountains
Moose	No specific provisions	Development and implementation of Best Management Practices for management of habitats providing thermal cover, screening, and forage production
	Overall risk: Low	Overall risk: Low
Marten	No specific provisions	No specific provisions Inclusion of habitat in Protected and No Harvest Areas Greater amounts of old forest, and specific management of coarse woody debris should reduce risk to Marten relative to the Base Case
	Overall risk: Low - Moderate	Overall risk: Low – Moderate, but slightly lower than Base Case due to management of forest age, and inclusion of habitat in Protected and No Harvest Areas
Bull Trout	No specific provisions Species benefits from general management of riparian areas	• Management of special spawning areas, natal areas, and staging locations • Species benefits from general management of riparian areas, aquatic ecosystems, and fish habitat • Management of access to sensitive staging and spawning areas
	Overall risk: Uncertain	Overall risk: Uncertain, but lower than under Base Case management
Riparian Ecosystems	Assumed equivalent to Forest Practices Code	• Assumed equivalent to Forest Practices Code • Development of Best Management Practices for management of riparian areas • Maintenance of function integrity of lakeshores and colluvial and alluvial fans
	Overall risk: Uncertain	Overall risk: Low - Moderate
Rare Ecosystems	No specific provisions	• Direction to reduce risk to Red and Blue Listed ecosystems • Protection of large area of Red Listed Cottonwood-Red Osier ecosystem along Morice River
	Overall risk: High	Overall risk: Moderate
Aquatic Ecosystems and Fish Habitat	Assumed to meet or exceed protection accomplished by the Forest Practices Code	• Assumed to meet or exceed protection accomplished by the Forest Practices Code • Inclusion of portions of Morice, Nanika, and Nadina Rivers within No Harvest Areas • Direction regarding: o water quality and temperature, o retention of functional integrity of streams, alluvial and colluvial fans, floodplains, riparian ecosystems, and lakeshore management areas, o rehabilitation of damaged fish habitat, o restoration of fish access impeded by land use, o maintenance of populations of lake resident fish that are sensitive to overfishing, o minimizing negative effects of water withdrawals.
	Overall risk: Uncertain	Overall risk: Low-Moderate

1 Introduction

This introductory section of the report reviews the general objectives and intent of the Morice LRMP and provides an overview of the methodology suggested by MSRM for socio-economic assessments of Land and Resource Management Plans (LRMPs).

1.1 Morice LRMP Objectives

The intent of the Morice LRMP is to provide strategic direction for the sustainable management of the approximately 1.5 million hectares of crown land and land based resources, in the plan area. The general objectives of an LRMP are:

- To reduce and resolve land use conflicts,
- To ensure sustainable resource management, and
- To provide economic diversity and security.[2]

In addition to the above noted general objectives, the Morice LRMP table has developed the following vision, principles and goals to guide plan development and implementation:

"The Morice LRMP table envisions a future with a plan area that will continue to have outstanding natural features including spectacular mountain ranges, large river and lake systems, extensive forest lands, grasslands and wilderness areas. The management of this environment will help to sustain healthy communities and a diverse and prosperous economy. The people of the Morice will continue to regard the land with a sense of pride that embraces a healthy balance between First Nations, environmental, economic, and social values."

"The vision for the Morice will be realized through the attainment of the following goals:

- diverse cultural values are respected and shared values are recognized
- issues relating to First Nations processes pertaining to rights and title are respected
- healthy air, water and soils
- a full range of ecosystems with natural processes, function and pattern
- native species and ecosystems within the range of natural variation (including old growth dependent species)
- stable access to a sustainable supply of natural resources
- profitable investment opportunities
- a diverse economy supporting an increase in value added processing
- resource management and manufacturing that maximizes local benefits
- opportunities for diverse jobs and life styles
- development that honours and respects the land, ecosystems and communities
- safe communities where citizens can live, work and recreate
- harmonious and integrated use of the landscape among different users

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[2] MSRM, *Morice Land & Resource Management Plan Planning Handbook*, January 2003.

- optimal social and economic value from utilization of natural resources
- opportunities for future generations to learn from living on the land
- public participation in local resource management decision
- continual improvement through monitoring and adaptive management."[3]

This socio-economic impact assessment does not attempt to evaluate how well the Plan conforms to these vision, principle and goal statements, but provides the above information primarily to establish the context within which the Plan was developed, and the corresponding scale of the socio-economic assessment.

1.2 Overview of Morice Plan Area Population and Economy

The Morice LRMP area covers 1.5 million hectares of Northwestern B.C. and has a population of approximately 5,200 people. The major communities in the region include the District Municipality of Houston (population of 3,580), the Village of Granisle (population of 350) and unincorporated communities such as Topley, Topley Landing and Tatchet. Another 8,700 people reside in Smithers, Telkwa and Burns Lake, all within a one hour drive of Houston, bringing the regional population to approximately 14,000 people.

The Morice LRMP area is part of the Bulkley Nechako Regional District (BNRD), which includes approximately 41,000 people. Other communities in the BNRD include Fraser Lake, Fort St. James, Vanderhoof and various First Nations rural communities. Appendix 1 provides more detail on demographic and community development data for the Morice LRMP local impact area.

The Morice LRMP area population has dropped by 19% between 1981 and 2001, mainly as a result of the closure of the Granisle and Bell Copper mines. The Village of Granisle population dropped from 1,430 people in 1981 to 350 in 2001.

The forest industry is by far the dominant employer in the region accounting for 57% of basic after-tax income in Houston, 24% in Smithers/Telkwa, and 34% for the Smithers/Houston region. There are two major sawmills in Houston and a number of smaller remanufacturing plants.

The public sector is a major employer in the region particularly in Smithers/Telkwa where the public sector generates 33% of basic income.

Mining accounts for 7% of basic income in Houston and 5% of the Smithers-Houston region, with the Huckleberry Mine some 86 km southwest of Houston generating 215 Person Years of direct employment. Mining accounted for 9% of the region's total basic income in 1981, but the closures of two mines near Granisle led to the drop in income.

The tourism sector accounts for 2% of income in Houston and 5% of income in the Smithers/Houston region. Major activities include guide-outfitting, guided angling, backcountry lodges, boating, freshwater angling, snowmobiling, backcountry skiing and hiking. The outdoor recreation sector is very important, generating an estimated 100,000 recreation days per year (estimate includes mainly freshwater angling, hunting by B.C. residents, snowmobiling and a few other backcountry activities).

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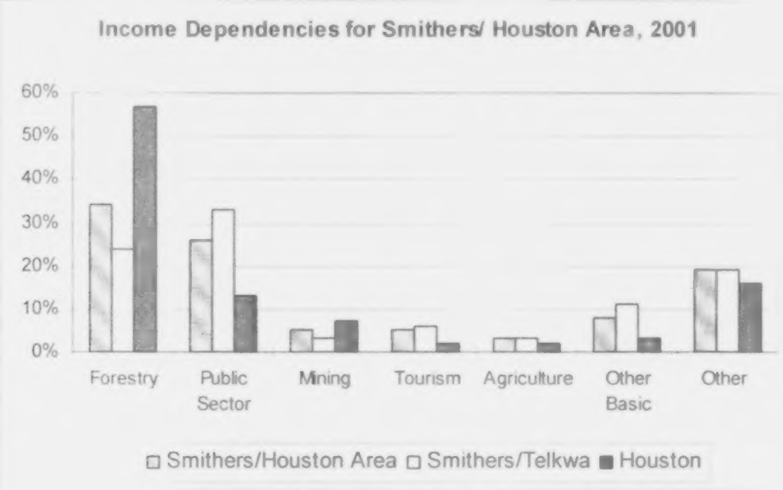
[3] MSRM, *Morice Land and Resource Management Plan Final Land Use Recommendation*, March 31, 2004, pages 8 and 9.

Chart 1 Percentage of Basic Income by Sector for Smithers/ Houston Area



Notes:

1. Represents the percentage of basic income in each major economic sector; basic income for each sector is defined as the direct, indirect and induced after tax income that depends on an independent sector such as forestry, mining and tourism. This analysis considers the public sector as a basic, independent sector.
2. Other basic income includes the high technology sector, construction, and other basic sector.
3. Other income includes transfer payments and non-employment income.

Source: Horne, Gary, *British Columbia's Heartland at the Dawn of the 21st Century, 2001 Economic Dependencies and Impact Ratios for 63 Local Areas,* BC Stats, 2004.

Agriculture and food accounts for 2% of income in Houston and the Morice LRMP, and 3% of basic income in the Smithers/Houston region, mainly through cattle ranching activities, dairy and food manufacturing. Other sectors include botanical forest products and trapping.

There are five First Nations that have declared interests in traditional territories in the Morice LRMP area under the tripartite treaty negotiation process:

- The Office of the Wet'suwet'en, which represents over 5,000 people. Of these, 2,362 people were registered in 2002 under the Hagwilget Village or Moricetown groups. The Wet'suwet'en traditional territory claimed under the treaty negotiation process covers 74% of the Morice LRMP area, but there are no year-round Wet'suwet'en communities within the plan area.

- Lake Babine (Nat'oot'en), which has over 2,050 members. Most reside outside the Morice LRMP Area, with the largest community on the Woyenne reserve near Burns Lake. The communities of Tatchet and Fort Babine are within or on the border of the Morice LRMP Area.

- Carrier-Sekani Tribal Council, which represents several member bands with a combined population of approximately 12,000 people; this includes the Burns Lake Indian Band (registered population of 88 people) and the Wet'suwet'en First Nation (208 registered Band members).

- Cheslatta Carrier Nation, which comprises some 286 registered band members centered on the south shore of Francois Lake, just outside the Morice LRMP boundaries.
- Yekooche First Nation, which has 175 registered band members (INAC 2002), most of whom reside on the shores of Stuart Lake to the east of the Morice LRMP area.

1.3 Key Elements of the Morice LRMP

The Morice LRMP has the following elements:

Protected Areas

- The proposed Protected Areas (PAs) represent 6.4% of the Morice LRMP area. They include the Nanika-Kidprice PA that will protect a chain of lakes and rivers with particular recreation, tourism and ecological value; the Burnie-Shea PA on the western boundary of the Morice LRMP area; various marine parks along Babine Lake; the Atna Ecological Reserve; and the Nadina Mountain and Old Man Lake areas southeast of Houston.

No Timber Harvest Areas

- A further 20.4% of the Morice LRMP area will be excluded from timber harvest.

Other Area Specific Management Polygons

- The Plan provides area specific management direction focusing on recreation, tourism, cultural and ecological values on a further 9.0% of the Morice LRMP area.

General Management Direction

- The Morice LRMP establishes general management direction (GMD) for the full spectrum of plan area resources, to be applied across the entire Morice LRMP area. The objectives of the GMD are to enhance the security of many of the area's key resource values, through the management of site specific features, access management, ecosystem management measures and consultation.

1.4 MSRM Methodology for Socio-Economic and Environmental Assessment

The objective of this assessment of the Morice LRMP is to provide an assessment of the expected socio-economic impacts of the plan relative to a benchmark scenario (Base Case Socio-Economic Assessment[4]), along with an assessment of the types and degrees of uncertainty involved in the analysis.

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[4] Pacific Analytics Inc. et al., *Morice LRMP Base Case Socio-Economic Assessment*, prepared for MSRM Skeena Region, 2004.

MSRM has prepared Guiding Principles to direct assessment of the socio-economic impacts associated with land use planning[5]. The socio-economic and environmental implications of management plans can be assessed from a number of perspectives:

1. Benefit-cost analysis estimates the differences in net value of the market and non-market outputs generated by the plan and/or each scenario from a pure "economic efficiency" or "net resource value" perspective.
   - For commercial sectors, the net resource value (or economic rent) represents the above-normal financial returns from a commercial activity that occur as a result of the product or service generated by that activity being in relatively fixed supply relative to demand. Rent can accrue to the entrepreneur, be captured by the land and/or resource owner (government) or be incorporated in wages paid to labour.
   - For non-commercial activities such as recreation and the benefits associated with environmental resources, the net benefits fall into two categories: use-related values (e.g. recreation, food gathering, air and fresh water) and existence-related values.
   - Net economic value estimates should be net of any external costs or 'negative externalities' imposed upon third parties (e.g. environmental or social disturbances).
2. Environmental risk assessment estimates the changes in likelihood of adverse environmental impacts resulting from human activities.
3. Economic impact analysis estimates impacts of the plan and/or scenarios on income and employment within specific communities, regions, or the Province as a whole.
4. Social impact analysis identifies and evaluates impacts of the plan and/or scenarios on demographic, local government and community concerns.

Each of these perspectives alone addresses only specific aspects of the consequences of a plan. The objective of socio-economic and environmental assessments is to review the complete array of social, economic and environmental impacts from a plan and present the information in tabular or matrix format to facilitate the review of the information by decision makers.

This report is primarily concerned with the social and economic impacts associated with Morice LRMP management direction. The potential environmental impacts of the LRMP are briefly summarized in Section 7 of this report, and are more thoroughly examined in a separate study and report[6]. No attempt is made to assess the direct government or private costs associated with formulating, facilitating and implementing the LRMP.

This Socio-Economic Assessment is based on the following key data sources:

- **Publicly available data on socio-economic indicators** on the various industrial sectors, communities and First Nations that may be impacted by the plan; the data are summarized in Appendices 1 through 10.

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[5] MSRM, *Socio-Economic and Environmental Assessment for Land and Resource Management Planning in British Columbia: Guiding Principles*, Draft for Discussion Purposes, January 2003.
[6] Edie A. and Associates, *Environmental Risk Assessment: Morice LRMP Table Final Land Use Recommendation*, June, 2004.

- **Geographic Information System (GIS) data**, referred to as **Area Statistics** throughout the report: this analysis overlays various resource values and activities (e.g. timber harvesting land base, mineral potential, tourism uses, aboriginal values, etc.) with the boundaries of the areas subject to specific resource management direction (e.g. Protected Areas, No Timber Harvesting zones, etc.). The MSRM government team provided the GIS data to *Pierce Lefebvre Consulting* who then tabulated the results. The information is summarized in Appendix 11.

  The Area statistics review the impacts of Version 5 of the area specific management package in the LRMP (ASM Version 5 – Feb. 10, 2004), which is slightly different than the final plan agreed upon by the LRMP Table; the key differences are listed in Appendix 11. The Area Statistics were not revised for the Final Land Use Recommendation, as the changes would not be significant in terms of resource value distribution. The following table summarizes the differences between the Morice LRMP Final Land Use Recommendation and the ASM Version 5.

Table 1 Morice LRMP Resource Management Zones

Morice LRMP Resource Management Zones	AREA (hectares)	Final % of Total	Area Stats - Version 5 of ASM
General Management Direction Only	962,954	64.1%	64.8%
Area Specific Management - No Timber Harvest	306,916	20.4%	20.6%
Area Specific Management - Other	135,582	9.0%	8.7%
Protected Areas:			
Babine Lake Marine Parks	5,760	0.4%	0.0%
Other Protected Areas	90,486	6.0%	5.9%
Sub-Total Protected Areas	96,246	6.4%	5.9%
TOTAL MORICE LRMP AREA	1,501,698	100%	100%
Babine Lake Marine Parks Water	3,667		
Excluding Water from Babine Lake Marine Parks:			
Protected Areas	92,579	6.2%	5.9%
Total Morice LRMP Area	1,498,031	100%	100%

Source: MSRM; Appendix 11 provides more detail.

- The **Morice Landscape Model** (MLM), a Spatially Explicit Landscape Event Simulation, or SELES model; this model was used to estimate the impacts of Morice LRMP management direction on the sustainable long term rate of harvest in the Morice LRMP area.

- **Various background and other reports** prepared for the Morice LRMP process and other uses; selected references are listed in Appendix 12.

2 Assessment of Plan Impacts on Primary Industrial Sectors

2.1 Forestry

2.1.1 Forest Industry Overview

The forest industry accounts for 34% of basic sector income in the Smithers/Houston area (57% of basic sector income if only Houston is considered, and 56% for the Morice LRMP area) and is by far the dominant employer in the region. The two major wood products mills in Houston are the Canadian Forest Products (Canfor) facility, with an annual output capacity of 600 million board feet of lumber (the largest softwood lumber mill in the world), and the Houston Forest Products (HFP, joint venture between West Fraser Timber and Weldwood) facility with an annual output capacity of 293 million board feet of lumber (also one of the 6 largest sawmills in the province).

The Allowable Annual Cut (AAC) for the Morice LRMP area (the Morice Timber Supply Area) is 1,961,117 m3 of timber, excluding woodlots, which in 2003 comprised an additional 47,009 m3.[7] Taking into account the latest upgrade at the Canfor mill, the two large sawmills based in Houston can process some 3 million m3 of timber, or 53% more wood than is harvested in the Morice LRMP area each year. The centralized primary processing operations in Houston create wood by-products that supply other types of wood processing operations in the region. Mills that depend on fibre and by-products from the Houston sawmills include some local remanufacturing plants (trim ends and lumber), a particle board plant in Smithers (sawdust), the Eurocan pulp and paper plant in Kitimat (wood chips) and the Canfor pulp and paper mills in Prince George (wood chips).

Timber harvested in the Morice LRMP area (Morice TSA) generates an estimated 0.74 Person Years (PYs) of direct employment in Northern B.C. per 1,000 m3 harvested, or an estimated 1,442 Person Years of direct employment (based on a 1,961,117 m3 AAC). The latest expansion/upgrade of the Canadian Forest Products mill in Houston has reduced the employment coefficient per m3 of wood processed at the mill, but while employment at primary facilities has dropped, changes in trim block processing provide additional value added opportunities.

Timber resources in the Morice TSA are provincially significant. While the Morice LRMP area accounts for 1.6% of the land area in B.C., it accounts for 3% of the provincial Timber Harvesting Land Base (THLB), 3.6% of volumes billed (2002) and 4% of provincial stumpage revenues.

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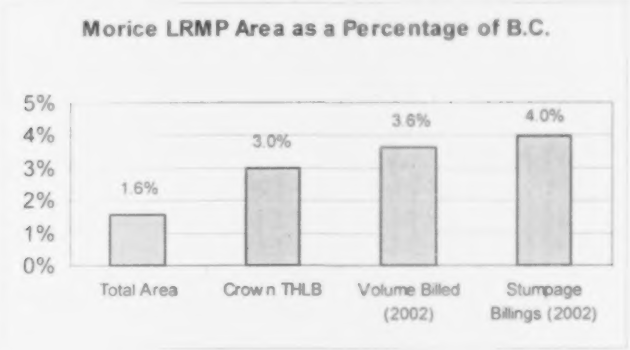
[7] Pacific Analytics Inc. et al., *Morice LRMP Base Case Socio-Economic Assessment*, 2004, page 29

Chart 2 *Morice LRMP Area as a Percentage of B.C. Forest Sector*



Source:
1. Crown Timber Harvesting Land Base (THLB): B.C. Ministry of Forests, *A Working Forest for B.C.*, 2001; Morice LRMP Area: MSRM, Skeena Region, Area Statistics as per Appendix 11.
2. Stumpage Revenues and Billed Volumes: B.C. Ministry of Forests, Revenue Branch, *Summary of Volumes and Average Stumpage Rates*, 2002; MOF website, March 24th, 2004.

The annual Morice AAC of 1,961,117 m3 has generated annual provincial government revenues of $89 million including stumpage, royalties, direct corporate taxes and provincial income taxes derived from direct employment (based on 1997 to 2002 average). Harvests and revenues in recent years have exceeded these amounts since Morice TSA timber volumes for which stumpage was billed averaged 2.1 million m3 between 1997 and 2002.

The net economic value from the Morice LRMP forest sector is estimated at $66.5 million per year or $34 per m3 (based on 1.961 million m3 harvest). The net economic value assumes that the net economic rent to the crown is approximately equal to stumpage values, that labour rents are 5% of wages and salaries for direct employment, and that there are no economic rents to capital in the industry. This net economic value accounting is incomplete, however, as it does not include consideration of externalities arising from forest activity. Appendix 2 provides more detail on the Morice LRMP forest sector.

2.1.2 Base Case Management Regime

For the purposes of estimating the impacts of the Morice LRMP on the forest industry, the Base Case is assumed to include all management practices specifically identified and considered in the Ministry of Forests' Timber Supply Review conducted in 2002. The two documents produced by the Timber Supply Review process that were consulted to assess Base Case management are:

- *Morice Timber Supply Area Rationale for Allowable Annual Cut (AAC) Determination*, B.C. Ministry of Forests Chief Forester, October 1, 2002; and
- *Morice Timber Supply Area Analysis Report*, B.C. Ministry of Forests Timber Supply Branch, February 2002

The intent of this analysis is to assess the impacts of LRMP management direction that is incremental to Base Case management. It is not always clear which of the management initiatives in the LRMP are incremental. Appendix 2 summarizes major forest management initiatives, and how these correspond in terms of their consideration in the Ministry of Forests' 2002 Timber Supply Review (TSR2) and their expression in the Morice LRMP. Table 2 on the following page is a condensed version of the more detailed table presented in Appendix 2.

Table 2 Summary Comparison of Consideration of Timber Harvesting Constraints

Base Case Mgmt. Initiative	TSR 2 Base Case[1]	Morice LRMP Mgmt. Direction	Simulated in MLM[2]
Proposed Protected Area Package	10 year harvest deferral in proposed protected areas	Smaller package of protected areas, but substantial new harvest exclusion areas	Fully simulated
Landscape-Level Biodiversity	Old-seral guidelines from FPC	Range of Natural Variation targets	Fully simulated
Visual Quality	Modeled VQO guidelines	Added new Scenic Areas and altered the value of some existing scenic areas	Where VQOs existed they were simulated (consistent with TSR2), elsewhere proxies were developed and simulated
Telkwa Caribou Herd Management	Modeled	No change	Modeled for specific forested habitats rather than as an average over the whole caribou management area
Integrated Resource Management Zone	Max. allow. dist. and greenup	No change	Fully simulated
Zone 'A' Morice River LRUP	Modeled	Area Specific Management (ASM)	Modeled as harvest exclusion
Recreation Areas (RA) of Outstanding Value and RAs with High Environmental Sensitivity	Excluded from THLB (6503 ha)	Area Specific Management for some RAs or portions	Simulated ASM rules for forest age, with LRMP boundaries
High Value Recreation Areas and Areas Requiring Special Management	No deductions, likely a small overestimation of timber supply	Area Specific Management for some RAs or portions	Simulated ASM rules for forest age, with LRMP boundaries
Owen Lake area (Wet'suwet'en)	No deductions	Area specific management (ASM)	Simulated ASM rules for forest age, with LRMP boundaries
Riparian Reserve Zones	Excluded from THLB	No change	Same as TSR2
Riparian Management Zones (S1 and S2)	1,028 ha excluded from THLB	No change	Same as TSR2
Agricultural Reserve Lands	removed from THLB[3]	Specified locations and rates of expansion	Fully simulated
Wildlife Tree Patches	3.6% Yield Curve Reduction	Expanded WTP requirements for large cutblocks/patches	Same as TSR2
	NA	Biodiversity GMD: ecological rotation on large blocks	Fully simulated
	NA	Recreation, Tourism GMD	Simulated forest cover retention adjacent to identified point and line features to protect functional integrity
	see above	Biodiversity GMD: seral state representation	Largely simulated
	NA	Area Specific Direction	Simulated ASM rules for forest age, with LRMP boundaries
	?	Biodiversity GMD: regionally significant and sensitive ecoystems and features	Partially simulated
	see above	Fish and Aquatic GMD	Only TSR2 riparian rules were simulated
	NA	Biodiversity GMD: natural succession pathways	Not simulated, potentially significant impact on AAC
	NA	Cultural Heritage GMD	Not simulated, potential impacts on AAC and/or costs
	NA	Botanical Forest Products GMD	Not simulated, potential impacts on AAC and/or costs
	NA	Biodiversity GMD: Culturally significant ecosystems	Not simulated, potential impacts on AAC and/or costs
	NA	General, Consultation, Air Quality, Community GMD	Not simulated, possible impact on operational costs.
	NA	Hunting and Fishing, Access GMD	Not simulated, possible impact on operational costs.
	NA	Water, Wildlife, Timber GMD	Not simulated, possible impact on operational costs.
	NA	Biodiversity GMD: coarse woody debris, species diversity	Not simulated, possible impact on operational costs.
	NA	Biodiversity GMD: Red and Blue ecosystems	Not simulated, impact on AAC and costs likely small
	NA	Settlement GMD	Not simulated, no likely impact on AAC or costs.
	NA	Biodiversity GMD: patch size distribution	Not simulated, possible positive impact on operational costs.

Notes:

1. BC Ministry of Forests Timber Supply Branch, Timber Supply Review; Morice Timber Supply Area Analysis Report, February 2002.
2. Morice Landscape Model (also referred to as SELES model) developed specifically to facilitate analysis of timber harvesting and ecological impacts of the Morice LRMP.
3. This area was mistakenly identified in the TSR2 report as agricultural leases; it was probably agricultural land reserve on Crown land.

Under the Base Case management regime about 94% of the timber harvesting land base (THLB) is managed under general integrated resource management provisions of the Forest Practices Code (FPC). The balance includes THLB in the Telkwa Caribou Recovery Area, Morice LRUP Zone A, Agricultural Land Reserve, Community Forests, and UREPs. As part of the Base Case management regime, some Scenic Areas and associated Visual Quality Objectives have been recommended, but are not yet established under the FPC. Visual Quality Objectives prescribing various levels of viewscape preservation (modification, partial retention, retention and preservation) and associated harvesting activity restriction, have been recommended for about 18% of the THLB.

2.1.3 Morice LRMP Resource Management Zones and Timber Value Distribution

The Morice LRMP establishes area specific management zones including Protected Areas, Timber Harvest Exclusion Areas and other zones that give specific consideration to non-timber values provided by the land base. The table following outlines the distribution of timber values across these newly created zones.

Table 3 Morice LRMP Resource Management Zones and Timber Values

Morice LRMP (Version 5 of Area Specific Management)	% of Plan Area	% of TSR2 THLB	% of TSR2 THLB Timber Volume
Harvest Exclusions:			
Proposed Protected	5.9%	1.4%	1.5%
No Timber Harvest	20.6%	2.4%	2.3%
Sub-total	26.5%	3.8%	3.8%
Resource Management Zones:			
Area Specific Management	8.8%	11.0%	11.9%
General Management	64.8%	85.2%	84.3%
Total Area	100%	100%	100%

Notes:

1. The area statistics are based on Version 5 of the area specific management package in the LRMP, which is slightly different than the final plan agreed upon by the LRMP table (shows 5.9% of protected areas, compared to 6.4% for the final LRMP scenario). The main difference results from the establishment of the Babine Lake Marine Parks as part of the final scenario, which are relatively small and include some of the water areas of Babine Lake. These changes would not impact the relative distribution of timber resource values significantly.

Source: MSRM, February 2004; Appendix 11 provides more detail.

The above area statistics indicate that 26.5% of the Morice LRMP area is either Protected Area or is subject to Area Specific Management that prohibits timber harvesting. These new Protected Areas and No Timber Harvest areas will alienate 3.8% of the land considered by the most recent timber supply review to contribute to the timber harvesting land base (THLB), and 3.8% of the merchantable timber volume. In addition, 11.0% of the THLB is located in areas with particular management emphasis on non-timber values (recreation, cultural heritage or other ecological values).

The Morice LRMP identifies scenic areas to be managed for visual quality impacts. Many of these areas had been identified and managed for visual quality under base case management, but the LRMP adds new areas and re-ranks many of the existing areas in terms of their visual landscape significance. LRMP identified scenic areas cover about 50% of the Morice THLB (compared to

42% under base case management) and more of the identified scenic areas are given a higher significance ranking than under base case management. The ultimate Visual Quality Objectives that will result from the LRMP scenic area designations will be determined by the Ministry of Forests, upon completion of Visual Landscape Inventories for the new scenic areas, giving consideration to the new visual landscape significance rankings established by the LRMP. It is expected that the combination of the increase in identified scenic areas, and the generally higher social significance rankings, will result in some increase in timber harvesting restrictions over base case assumptions.

2.1.4 Morice LRMP Benefits to the Forest Industry

The benefits to the forest industry of the Morice LRMP can be assessed only qualitatively. They include greater land use certainty, potentially faster approval of forest development plans, support for product certification initiatives, and improved communication lines with community stakeholder groups and First Nations.

The Base Case socio-economic assessment[8] does not document any general or specific concerns with respect to land use uncertainty, land use conflict or product acceptance in the discussion of forestry in the Morice LRMP area (although there are some references to potential conflict between timber harvesting and tourism operations, and timber harvesting and agriculture[9]).

A review of the BC Forest Practices Board web site revealed two formal complaint investigations involving forest development plan impacts on non-timber values in the Morice LRMP area. One case involved the environmental impacts of a bridge improving public access from the Fort St. James forest district to the east side of Babine Lake[10], and the other involved conflicts between timber harvesting plans and a fishing lodge operation near Morrison Arm[11]. In the second of these cases, the lack of a Morice LRMP to guide forest development plan approval was noted in the Forest Practices Board's commentary[12].

During the public review process for TSR-2, The Office of the Wet'suwet'en expressed concern that continuing timber harvesting within Wet'suwet'en territories, particularly at low elevation, is significantly affecting Wet'suwet'en culture.[13]

Representatives for all of the above noted interests participated in the development of the consensus based Morice LRMP, which includes provisions to diminish the extent of existing or potential future conflict between timber harvesting and these other values.

Canadian Forest Products Ltd. (Canfor) and Houston Forest Products (HFP) have both pursued and achieved various forest harvesting certification standards, and continue to pursue others

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[8] Pacific Analytics Inc. et al., *Morice LRMP Base Case Socio-Economic Assessment*, 2004, page 26 to 41.
[9] Ibid, pages 56 and 71.
[10] Forest Practices Board, *Effects of the MacDougall Creek Bridge on Access to the East Side of Babine Lake*, Complaint Investigation 000280, April 2002.
[11] Forest Practices Board, *Timber Harvesting and Fishing Lodge Interests near Morrison Arm*, Complaint Investigation 000284, January 2002.
[12] Ibid, page 9.
[13] BC Ministry of Forests, *Morice Timber Supply Area Timber Supply Review: Summary of Public Input, September 2002, pg.7.*

(Canfor and HFP are two of the partners in the Morice and Lakes Innovative Forest Practices Agreement which is producing a Sustainable Forest Management Plan for certification by the Canadian Standards Association). The effort and cost involved in achieving certification indicates that the forest harvesting licensees expect certification to be beneficial. The development of the Morice LRMP supports certification initiatives by providing strategic guidance (developed by a broader cross-section of stakeholders) to Sustainable Forest Management Planning, and by contributing to documentation of the spatial occurrence of resource values on the landscape.

2.1.5 Potential Timber Supply Volume Impacts

The benchmark 2002 Ministry of Forests Timber Supply Review (TSR2) base case timber supply projection for the Morice TSA projected that the current AAC of 1.96 million m^3 could be maintained for 4 decades before declining by 8.1% in the fifth decade to the Long Term Harvest Level of 1.80 million m^3 (referred to hereafter as the 'falldown').

To assist in the analysis of potential LRMP impacts on timber harvesting in the plan area, a suite of Spatially Explicit Landscape Event Simulator (SELES) tools was utilized by the Morice LRMP Government Technical Team to construct a Morice Landscape Model (MLM)[14]. This spatially explicit model identifies the Timber Harvesting Land Base (THLB) at a one square hectare resolution, and tracks several attributes associated with forest cover, operability, management zones, roads, etc. The model can be used to examine the impacts on the sustainable rate of timber harvest, of various land use and forest management initiatives. As noted in Table 2, not all of the Morice LRMP management direction can be simulated with the MLM.

General Timber Supply Impacts

Timber supply analysis using the MLM, undertaken by Gowland Technologies[15] and reviewed by the BC Ministry of Forests, indicates that relative to the TSR2 base case the sustainable rate of timber harvest would decline by 7.4% to accommodate the Morice LRMP (an average of 147,000 m^3/year over the first 6 decades and 133,000 m3/year thereafter). This includes:

- 1.9% due to the THLB reduction for proposed Parks, Protected Areas, and No Timber Harvesting Areas; and
- 5.5% related to the management direction for the Working Forest component.

If the only changes to the TRS2 Base Case timber supply model (as simulated by the MLM) are the exclusion of THLB in the Protected Areas and No Timber Harvesting areas (3.7% of THLB)[16], the resulting adjustment required to long term harvest levels is a decline of 1.9% from Base Case levels. The indicated impact on the long term harvest level from THLB exclusions is about half of what might be expected if the impacts were directly proportional to the amount of THLB being excluded. This is a reflection of the generally lower than average productivity of the THLB lands being excluded (64% is in less productive ESSF types), as well as issues of access and rotation timing for many of the excluded sites.

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[14] Gowland Technologies et al., *Morice Landscape Model*, December 2, 2003.

[15] Gowland Technologies (Andrew Fall), *Final Plan Analysis*, Morice LRMP: Government Technical Team, May 5, 2004, 21 pages.

[16] The amount of THLB in Morice LRMP harvest exclusion areas indicated by the Morice Landscape Model simulations is slightly different (3.7%) than the THLB exclusion indicated by the GIS Area Statistics (3.8%). The MLM simulations are based on the 'Final Scenario' version of area specific management, while the Area Statistics are based on an earlier version (Version 5) of the Morice LRMP area specific management.

Management direction that may have impacts on timber supply, but that was not simulated in the MLM includes natural succession pathway requirements for biodiversity, cultural heritage and culturally significant ecosystem management, and management for botanical forest products. The significance of these additional impacts is very difficult to gauge, as the interactions between overlapping forest harvesting constraints are complex, and the LRMP management direction allows some latitude in the interpretation and implementation of these management guidelines.

The 7.4% downward pressure on long term timber harvest volume estimated by the MLM results both from timber harvesting land base exclusions (Protected Areas and No Timber Harvest areas), and lower intensity harvesting to accommodate other management initiatives in the LRMP. The degree of uncertainty inherent in the harvest level impact estimate is quite different for each of these two types of impacts.

THLB exclusions are relatively straightforward to model, and the associated timber supply impacts are not amenable to mitigation through careful management or implementation strategies. This is not the case with most of the other management direction in the Morice LRMP. The MLM attempts to simulate as much of the management direction in the Plan as possible, but the simulation process for many of the management objectives involves making assumptions about how the management direction will be implemented, and devising simulation algorithms that best mimic the assumed management practices. There is significant potential for the actual impacts of these initiatives, given innovative management and implementation strategies, to be different than what is estimated by the MLM. The planning table has committed to examining implementation approaches that minimize costs and impacts.

An example is agriculture expansion land. The LRMP provides a schedule for the maximum rate of expansion and the maximum final amount of Crown land (22,500 ha) alienated for agriculture expansion.[17] The MLM simulated these maximum rates of land take up, which resulted in an additional 6,000 hectares of THLB alienated for agriculture, over and above what had been set aside in TSR-2 for agriculture expansion. This resulted in a 1% decline in the long term sustainable rate of timber harvest (a significant portion of the total 7.4% decline attributable to the LRMP). There is considerable doubt, however, that the maximum take up rates and final amounts of land alienated for agriculture will be realized, and that the impacts on THLB will be as large as indicated.

While the MLM can provide a good indication of the influence of the Morice LRMP on the sustainable rate of long term timber harvest in the Morice TSA, it cannot determine or predict any action that may be taken by the Chief Forester in establishing the future AAC for the Morice TSA (the next timber supply review is currently scheduled for 2007). An AAC determination results from consideration of many factors and influences, including potential socio-economic impacts of changes to AAC, in determining the most appropriate short term level of timber harvest.[18]

Timing of Timber Supply Impacts

As outlined in the Morice LRMP Base Case Socio-Economic Assessment[19], the Morice TSA harvest level under TSR2 projections can be maintained at the current level until the fifth decade of the projection, when it must decline by 8.1% to the long term harvest level of 1.8 million m3. In the TRS2 Analysis Report[20], alternative harvest flows were examined including the possibility of increasing the harvest by 8.8% from the current level for three decades, before stepping down to the long term harvest level in the fifth decade, harvesting at 3% below the long term level in the sixth to tenth decades, and then stabilizing at the long term harvest level for the remainder of the projection. This sensitivity analysis suggests that there is sufficient mature timber in the Morice TSA to allow some flexibility in short and medium term harvest levels, without compromising the long term harvest level.

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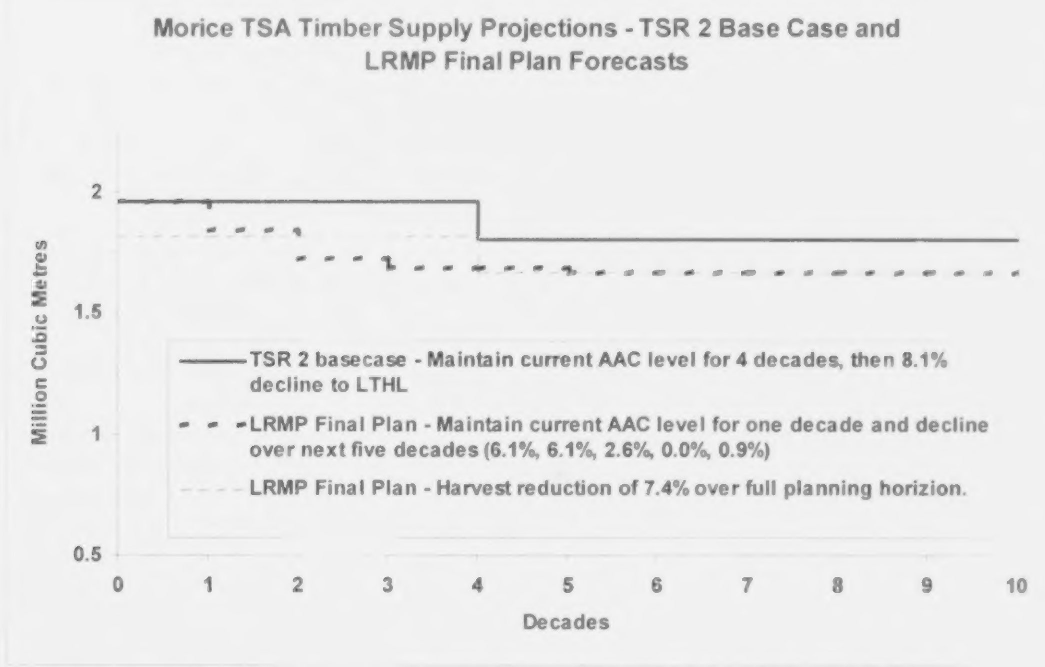
[17] See Section 2.4 of this report for more detail on the agriculture expansion management direction.

[18] See BC Ministry of Forests, *Morice Timber Supply Area; Rationale for Allowable Annual Cut (AAC) Determination* , October 1, 2002 for a complete discussion of factors considered in the most recent AAC determination for the Morice TSA.

[19] Pacific Analytics Inc. et al., *Morice LRMP Base Case Socio-Economic Assessment*, 2004, page 34.

Further analysis of the Morice LRMP impacts by Gowland Technologies and MOF Forest Analysis Branch indicates how the 7.4% overall LRMP impact could occur over time (see "maintain AAC for one decade" line in Chart 3). The analysis follows Ministry of Forests modelling policy for harvest flow projections. MOF modelling policy requires the current AAC to be maintained for as long as possible (to minimize short-term impacts), while limiting the harvest declines between decades to less than 10%, and maintaining the harvest level always at or above the long-term level (so that short and medium term management do not compromise long-term yields).

Chart 3 Morice TSA Harvest Flow Projections



Source: Ministry of Sustainable Resource Management and Ministry of Forests, May 7, 2004.

Applying MOF harvest flow policies to the 7.4% downward pressure on timber supply exerted by the Morice LRMP, suggests that timber supply can be held at current levels for one decade before beginning the step down to long term harvest levels. To accomplish this, however, the influence of the 'falldown' to long term harvest levels begins two decades sooner, starting in decade 3 rather than in decade 5.

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[20] B.C. Ministry of Forests Timber Supply Branch, *Timber Supply Review, Morice Timber Supply Area Analysis Report*, February 2002, page 37.

2.1.6 Socio-Economic Impacts Associated with Lower Harvest Flows

The AAC in the Morice LRMP area (Morice TSA) has been fully utilized over the past several years, and any downward revision in AAC is likely to result in a reduction in forest industry activity both inside and outside the plan area. A reduction in harvest flows for the Morice TSA could result in declines in provincial employment, government revenues and net economic value as outlined in the following table.[21]

Table 4 Socio-Economic Impacts Associated with a Decline in Morice TSA Harvest Flows

Decade	1	2	3	4	5	6 and thereafter	Annual Average Over 6 Decades	Perpetuity Equivalent (3% discount)
Harvest ('000 m^3)								
Base Case TSR2	1,961	1,961	1,961	1,961	1,803	1,803	1,908	
LRMP	1,961	1,841	1,729	1,684	1,684	1,669	1,761	
Harvest Reduction	0	120	233	277	119	134	147	
Decade to Decade Change		6.1%	6.1%	2.6%	0.0%	0.9%		
Change Relative to Base Case	0.0%	6.1%	11.9%	14.1%	6.6%	7.4%	7.7%	
Direct Employment Reduction (PY)								
Decade to Decade Change		88	83	33	0	11		
Total Change Relative to Base Case		88	171	204	88	99	108	
Direct, Indirect//Induced Employment Reduction								
Direct	0	88	171	204	88	99	108	
Indirect/Induced	0	105	204	243	104	117	129	
Total	0	193	375	447	192	216	237	
Reduction in Stumpage ($mil./year)	$0.0	$3.9	$7.6	$9.0	$3.9	$4.4	$4.8	$4.1
Loss of Net Economic Value @$34/m3	$0.0	$4.1	$7.9	$9.4	$4.0	$4.5	$5.0	$4.2

Applying a MOF harvest flow policy scenario to the 7.4% downward pressure on timber supply from the LRMP, as well as the 8.1% 'falldown' anticipated in TSR2, results in variable socio-economic impacts over the first 50 years of the projection.

Stumpage revenue impacts range between $0 in the first decade and $9.0 million in the fourth decade, settling at $4.4 million in decade 6 and beyond. Net economic value impacts follow a similar pattern. Applying the time value of money principle (income in the present is preferable to income in the future, or conversely, loss of income in the future is preferable to loss of income in the present) provides further perspective on the stumpage revenue and net economic value impacts. A 3% discount rate is a reasonable reflection of the provincial government's real, long term borrowing cost (after adjustment for long term inflation expectations)[22]. The level, ongoing reductions that yield the same present value as the variable amounts resulting from harvest flow policy, using a 3% discount rate, are $4.1 million in stumpage revenues per annum, and $4.2 million in net economic value per annum[23].

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[21] Assumes a linear and concurrent relationship with timber harvesting. See Appendix 2 for details.

The net economic value accounting is incomplete, however, as it does not include externalities arising from forest sector activities. Concerns expressed by planning table representatives, as well as the base case environmental risk assessment for the Morice LRMP, indicate that there are negative externalities associated with base case timber harvesting practices and rates of timber harvesting. The extent to which these negative externalities will be reduced by Morice LRMP management direction should be set against the raw net economic value cost implications. While we have been unable to quantify either the base case level of these externalities, or the extent of their potential amelioration through LRMP initiatives, there is some expression of this amelioration in the benefits of the LRMP to other sectors and interests, as well as in the Environmental Risk Assessment of the Morice LRMP.[24]

Employment impacts projected from the harvest flow policy scenario follow the same pattern, with no impacts in the first decade, followed by employment levels that range between 88 direct jobs and 204 direct jobs below base case for the next four decades, before settling at 99 direct jobs less than base case in decade 6 and beyond. The average number of direct jobs at risk over the first 6 decades of the projection is 108, and with indirect and induced jobs included, the average is 237 in the province.

While it is likely that a drop in AAC would impact jobs, government revenues and net economic value, it is unclear which operations are likely to be affected. Mills in the vicinity of the Morice LRMP area have a combined milling output capacity of 1.5 billion board feet of lumber, in addition to the 893 million board feet of lumber output capacity at the two sawmills in Houston (Appendix 2). As noted earlier, the Canfor sawmill in Houston has just been upgraded and at 600 million board feet in annual output capacity, is the largest in the world. The Houston Forest Products sawmill is also a large sawmill, although it has half the capacity of the Canfor mill. By comparison, there are 5 sawmills nearby with annual capacities of less than 200 million board feet of lumber.

Any job losses in harvesting and silviculture would likely be felt mainly in Houston/Granisle (an average of 43 direct FTEs over the first 6 decades), but job losses in processing would likely occur in other nearby communities (an average of 65 FTEs over the first 6 decades). After considering the indirect and induced impacts, the average loss of 43 direct FTEs in Houston/Granisle might result in an average loss of approximately 56 direct, indirect and induced

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[22] Yields on long term Government of Canada bonds currently average about 5.15% for fixed coupon rate bonds, and 2.45% for real return bonds with coupon rates tied to consumer price index changes. This implies a long term inflation expectation of about 2.7%. Long term Government of BC bonds currently yield about 5.7%. Deducting the 2.7% long term inflation expectation indicates a required real rate of return of 3% for long term Government of BC debt instruments. Sources: www.bankofcanada.ca and RBC Action Direct fixed income quotes.

[23] Using alternative discount rates of 1% and 5%, yields estimates of $4.4 million and $3.4 million per annum respectively for stumpage revenue impacts, and $4.6 million and $3.6 million per annum respectively for net economic value impacts.

[24] Edie A. and Associates, *Environmental Risk Assessment: Morice LRMP Table Final Land Use Recommendation*, June, 2004.

FTEs in those communities over the first 6 decades of the projection.[25] The harvest flow policy scenario indicates that none of these job loses would occur in the first 10 years of the projection.

2.1.7 Potential Timber Harvesting Cost Impacts

As noted in Table 2, many of the management initiatives in the Morice LRMP may lead to additional timber harvesting costs for the forest industry. These additional costs may arise from reduced operating efficiencies (due to lower volumes being extracted from some harvest areas), increased harvest planning effort, alternate harvest methods, alternate access routes, alternate harvest scheduling, or alternate silviculture treatments in response to LRMP management direction.

It is very difficult to assess the potential magnitude of these costs, or how incremental they might be, compared to what would have occurred under Base Case management. The forest development planning process, directed by the Forest Practices Code (superseded by the Forest and Range Practices Act), would likely have resulted in more ad hoc management by licensees for many of the values considered in the LRMP management direction. Some of these values would likely have been considered either in the initial development of a forest development plan, or through the public review process required before approval of the development plans by the district manager. Since consideration of these values would not be guided by the broader context of a strategic LRMP, the results may be suboptimal from a regional perspective, but it is not clear to what degree costs involved in planning, harvesting and silviculture activities would be lower without the LRMP guidance.

Discussions with the two major Morice TSA licensees yielded some rough estimates of annual timber harvesting cost implications of the Morice LRMP management direction, as set out in the table below. The licensees indicated that the uncertainty involved in generating these estimates could be expressed as a range in the total $0.48 per m3 cost estimate from $0.30 per m3 to $1.00 per m3, applied to the total TSA harvest. The licensees believe that all of these costs, with the exception of those assigned to invasive species control ($0.01 per m3), would be incremental to the costs they would experience under the Forest and Range Practices Act.

Table 5 Potential Timber Harvesting Costs from Timber Harvesting

Morice LRMP Management Initiative	Additional Costs ($ per m3 of TSA Harvest)	Total Additional Cost (2 Million m3 AAC incl. Woodlots)
Landscape-Level Biodiversity provisions	$0.16 per m3	$320,000
New VQAs and VQOs	$0.15 per m3	$300,000
Fish and Aquatic GMD	$0.05 per m3	$100,000
Cultural Heritage GMD	$0.02 per m3	$40,000
Invasive Species Control*	$0.01 per m3*	$20,000*
Consultation GMD	$0.02 per m3	$40,000
Access GMD	$0.05 per m3	$100,000
Water GMD	$0.02 per m3	$40,000
Total	$0.48 per m3	$960,000

*The forest licensees believe that the invasive species control measures and associated costs would also be required under the Forest and Range Practices Act.

Source: Based on personal communications with major forest licensees, April 2004. Table 30 in Appendix 2 provides further detail on these estimates.

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[25] Section 4 (Assessment of Plan on Communities/Settlements) provides more detail.

The estimated $0.48 per m3 in additional costs is approximately 1.5% of the average $32.61 per m3 in stumpage collected annually from the Morice TSA. Based on a preliminary review, a Ministry of Forests' representative believes these cost estimates may be high, but indicated that it was not possible to provide a more accurate estimate without a more detailed review.

Any increases in harvesting costs are likely to be borne primarily by the provincial government, as residual claimant to the rents generated by forest harvesting, assuming that there are no accompanying volume impacts. If increased costs result in marginal timber becoming uneconomic to harvest, however, some of the impacts may be distributed more broadly to the forest industry and its workers.

2.1.8 Summary of Plan Impacts on the Forest Sector

Summary of Plan Impacts on the Forest Sector

The Morice LRMP will provide benefits to the forest sector in the form of greater land use certainty, faster approval of forest development plans, support for product certification initiatives, and improved communication lines with community stakeholder groups.

The Morice LRMP excludes 3.7% of the existing THLB from timber harvesting activity, resulting in a 1.9% downward influence on the long term timber harvest rate. Adding impacts from Other Area Specific management direction, as well as the package of General Management Direction could lead to overall downward pressure on long term harvest levels of 7.4%.

Applying MOF harvest flow policy to the downward pressure on timber supply indicates that the AAC can be maintained at the current level for one decade, before beginning a series of stepdowns to a long term level in decade 6 which is 14.9% below the current level, and 7.4% below the TSR2 long term level (TSR2 anticipated an 8.1% 'falldown' from the current AAC to the long term level in the fifth decade).

The stepdown in stumpage revenues over five decades, which would not begin until the second decade under the MOF harvest flow policy scenario, is equivalent to a loss of $4.1 million per annum starting immediately and continuing indefinitely. Similarly, the equivalent loss in net economic value is $4.2 million per annum.

An average of 108 direct forest industry jobs would be at risk over the first six decades of the harvest flow policy scenario, and 99 thereafter. Following the harvest flow scenario over the 6 decades, the direct job impacts would range from 0 in the first decade to 204 PYs in the fourth decade, relative to the base case projections.

Most of the job impacts of reduced timber harvesting activity would be felt within the Morice LRMP area, while most of the job impacts of reduced wood product manufacturing activity would not likely be felt in Houston but outside of the Morice LRMP area.

Forest licensees estimate that management direction in the Morice LRMP may lead to increased harvesting costs of about $0.50 per m3 in the Morice TSA, or an additional decline in annual government stumpage revenues and net economic value of about $1 million per annum. A MOF representative believes these cost estimates may be high.

2.2 Minerals and Energy

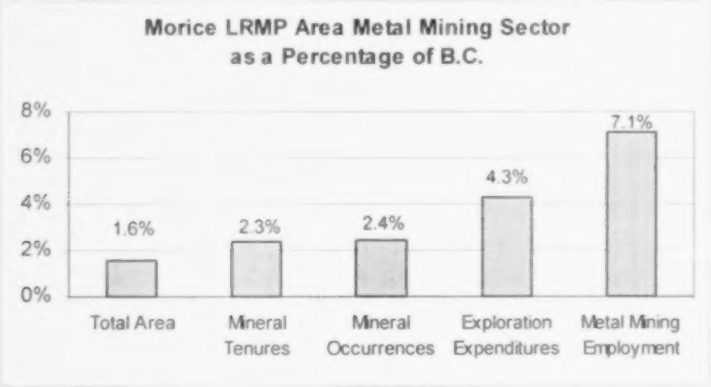
2.2.1 Overview of Mineral Sector

Mining and mineral exploration activities have been substantial and significant in the Morice LRMP area dating back to the turn of the 20th century. There are fourteen past producing metal mines in the Morice, including four major producers:

- Huckleberry Mine (1997 to present) located 86 km southwest of Houston employs approximately 215 people (2002 data), of which 38% reside in the Morice LRMP area. It generates $39 million in annual Gross Domestic Product, $1.9 million in annual government revenues (including mining and other direct corporate taxes as well as employee income taxes), and $1.65 million in annual net economic value. The mine is expected to continue production for at least another 5 years, given known economic reserves.
- Major past producing mines that are now closed include the Granisle mine (1966 to 1982), the Bell Copper mine also near Granisle (1972 to 1992) and the Equity Silver mine (1981 to 1994). A few employees remain for reclamation and other related work at these mine sites.

The Morice LRMP area metal mining sector is provincially significant, accounting for 2.4% of the province's metallic mineral occurrences and 4.3% of provincial mineral exploration expenditures. Huckleberry Mine is one of 8 large metal mines currently operating in B.C. and accounts for 7.1% of B.C.'s current employment in the metal mining sector).[26]

Chart 4 Morice LRMP Area Metal Mining Sector as a Percentage of B.C.



Source: *Pierce Lefebvre Consulting* based on various data; Appendix 3 provides more detail.

The B.C. Ministry of Energy and Mines has developed a system to identify and rank metallic mineral tracts in the province based on the estimated value per hectare of metallic mineral resources contained within each tract. The province is divided into 907 unique tracts (Level 2 – June 2003) based on geological commonalities and boundaries, and each tract is ranked (from

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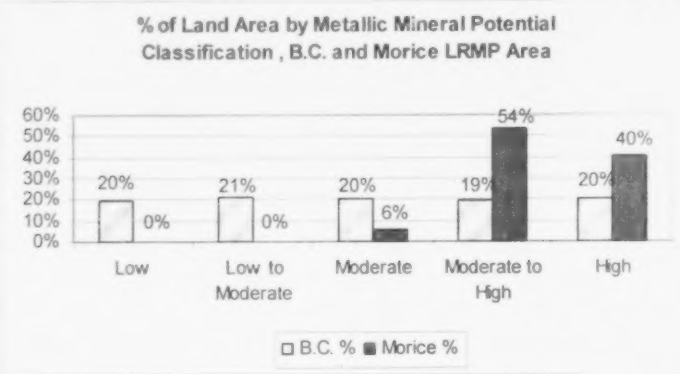
[26] Based on the B.C. metal sector employing 3,012 people in 2001 (this excludes employment in coal, industrial minerals, mineral exploration and construction aggregates); source: B.C. Ministry of Energy and Mines website, accessed April 2004.

1= lowest to 907= highest) based on the per hectare value of the assumed metals contained in the tract. The tracts are then assigned a descriptive potential rating of either Low, Low to Moderate, Moderate, Moderate to High or High, with approximately 1/5th of the province's land area falling in each category. Comparing the rated potential of the tracts falling within the Morice LRMP area to all tracts in the province yields the following observations:

- There is no land in the Morice LRMP area that is rated as having Low or Low to Moderate metallic mineral potential, and
- In the Morice LRMP area, approximately 40% of the lands are rated as having High metallic mineral potential and 54% are rated as having Moderate to High metallic mineral potential.

Chart 5 Metallic Mineral Potential for B.C. and Morice LRMP Area



Source: B.C. Ministry of Energy and Mines MINFILE database; Appendix 3 provides more detail.

The B.C. Ministry of Energy and Mines reports an average of some $2 million in exploration expenditures per year (2002$) for the Morice LRMP area from its Assessment Report Indexing System (ARIS) database for 1970 through 2002. ARIS reported expenditures account for approximately half of all exploration expenditures in B.C., implying that mineral exploration may be as much as $4 million per year in the Morice LRMP area, generating some 36 FTEs in direct employment in B.C.[27] While the exploration expenditures have modest socio-economic impacts, the benefits associated with mineral exploration accrue mainly when exploration successfully identifies a mineable deposit.

Industrial mineral potential in the Morice LRMP area is much less significant in the provincial and regional contexts than metallic mineral potential. (Industrial minerals include a wide range of minerals such as magnesite, gypsum, silica, limestone and dimension stone such as granite, marble, etc.).[28] The Morice LRMP area has an estimated 64,669 hectares of High/Extreme industrial mineral potential, or approximately 0.3% of all High/Extreme industrial mineral potential in B.C. Land rated as having High/Extreme industrial mineral potential represents only 4% of the total Morice LRMP area compared to 22% for all of B.C. The industrial mineral potential of the Morice LRMP area has not been well explored, as distance to major markets or tidewater limits the economic potential of industrial mineral deposits in the area. The Morice LRMP area includes only 6 industrial mineral occurrences in the Morice LRMP area that do not also have metallic potential. (By comparison, the Morice LRMP data show 243 metallic mineral occurrences).[29]

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[27] BC Stats estimates that every $1 million in mineral exploration expenditures in B.C. generates 9.6 Person Years (PYs) of direct employment and another 5 PYs of indirect employment as a result of purchases of goods and services required for exploration. Source: Based on a survey undertaken by Maki and Sunderman for BC Stats; as mentioned in: Holman, Gary and Pierce Lefebvre Consulting, *Socio-Economic Base Case for the Southern Rocky Mountain Management Plan (SRMMP)*, 2002.

[28] For more on industrial minerals, refer to: Glenn E. Bridges & Associates Inc., *Industrial Minerals – Building Block Profile*, prepared for MSRM and MEM, 2002, 19 pages.

2.2.2 *Base Case Management Regime*

In 2002, the B.C. Government legislated a two zone system for mining along with a "single window" permitting process for exploration and development of mineral resources.

- Mineral exploration and mining are prohibited in all protected areas, parks and ecological reserves.

- Elsewhere, mineral exploration and mining development is permitted subject to various provincial rules and regulations (e.g. Mines Act (including Health, Safety and Reclamation Code and the Mineral Exploration Code (MEC)), the Environmental Assessment Act and the Forest and Range Practices Act). Under these regulations, the mining industry is required to follow strict rules before development can proceed. Under the Environmental Assessment Act, large scale development projects such as a metal or industrial mine must assess the environmental, social, economic, cultural and heritage impacts of a project. Depending on the complexity of the issues, the length of the Environmental Assessment process ranges between 12 and 30 months, or longer if a public hearing is required.[30]

Under Base Case management (i.e. without the Morice LRMP), less than 600 hectares (or 0.04% of the plan area) are in protected areas or ecological reserves. Mining and mineral exploration is permitted on more than 99.9% of Morice LRMP area lands, subject to the codes and regulations noted above.

The Base Case management regime does have areas where visual quality objectives place some restrictions on timber harvesting activity and could potentially affect the mining sector as well. As noted in the Morice Government Technical Team report on Minerals and Energy[31], however, the site sizes or road access for mining should not significantly impact forestry values or visual quality classes. Moreover, environmental assessment or mine development approval processes can consider and act on visual sensitivity information. As a result, while the Base Case recognizes that 30% of mineral occurrences are within areas with defined visual quality objectives, this is likely to have little impact on mineral exploration or mine development.

The Telkwa Caribou Recovery area established in the Morice Planning Area prior to the Morice LRMP includes 30 metallic mineral occurrences (12% of all metallic mineral occurrences). In general, the permitting conditions under the Mining Act and other legislation require developers to take caribou and other values into account when establishing mineral exploration and development plans. It is likely that the presence of caribou in the area would influence the timing of activities and/or impose conditions that may result in higher development costs.

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[29] Based on a review of the MSRM Base Case area statistics.

[30] Glenn E. Bridges & Associates and Fluor Daniel Wright Ltd., *Metal Mining – Building Block Profile*, prepared for MSRM and MEM, 2002, 22 pages.

[31] Morice Government Technical Team, *Resource Analysis Report, Minerals and Energy*, prepared for the Morice LRMP Table, MSRM, April 29, 2003, page 16 of 20 pages.

Under the Base Case management regime, the mining industry is required to consult with stakeholders, including the recreation and tourism sectors before proceeding with development. Moreover, in January 2004, the B.C. & Yukon Chamber of Mines, the Council of Tourism Associations of B.C. and the Mining Association of B.C. signed a Memorandum of Understanding endorsing the Two-Zone system and setting some ground rules for resolving conflicts between tenure holders in the tourism sector and in the mining sector.[32]

2.2.3 Morice LRMP Impacts on Mineral Sector

The following tables summarize the distribution of metal and industrial mineral values in the Morice LRMP area across the various resource management zones designated in the LRMP.

Table 6 Morice LRMP Resource Management Zones and Mineral Potential

Morice LRMP (final scenario)	Morice LRMP Resource Management Zone					Area (ha)
	Protected Areas	No Timber Harvest	Other Area Specific	GMD Only	Total	
Metallic Mineral Potential						
High	5.2%	25.1%	5.8%	63.9%	100%	607,981
Moderate to High	7.9%	17.7%	13.2%	61.2%	100%	809,403
Moderate	0.0%	1.8%	3.9%	94.3%	100%	84,268
Moderate to Low	0.0%	0.0%	0.0%	100.0%	100%	4
Low	N/A	N/A	N/A	N/A	N/A	0
Industrial Mineral Potential						
Extreme	41.7%	32.8%	2.6%	23.0%	100%	64,660
High	N/A	N/A	N/A	N/A	N/A	0
Moderate	1.8%	6.3%	8.2%	83.7%	100%	362,311
Fair	0.2%	0.0%	22.7%	77.0%	100%	110,300
Low	6.4%	26.2%	9.2%	58.1%	100%	964,425

Note: The metallic mineral potential estimates utilized for the area statistics are based on the most current (Level 2, June 2003) tract estimates published by the BC Ministry of Energy and Mines, rather than the Level 1 tract estimates outlined in the SEA Base Case.
Source: B.C. MSRM, March 2004; Appendix 11 provides more detail.

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[32] B.C. & Yukon Chamber of Mines, Council of Tourism Associations of B.C. and Mining Association of B.C., *Memorandum of Understanding*, January 22, 2004, 8 pages.

Table 7 Morice LRMP Zones and Mineral Tenures, Exploration and Occurrences

Morice LRMP (Version 5 of Area Specific Management)	Protected Area	No Timber Harvest	Other Area Specific	GMD	Total	
Mineral Tenures (1)	0.5%	15.2%	13.8%	70.5%	63,670	Hectares
ARIS						
Assessment Report Sites	1.6%	14.5%	8.0%	75.9%	925	Sites
Expenditures ($1986)	1.0%	17.0%	3.6%	78.4%	100%	
Metallic Mineral Occurrences						
Developed Prospect	1	3	0	10	14	Sites
Past Producer	0	2	1	11	14	Sites
Producer	0	0	0	1	1	Sites
Prospect	0	7	1	17	25	Sites
Showing	4	48	17	120	189	Sites
Total Occurrences	5	60	19	159	243	Sites

Note:

1. Protected Area boundaries were adjusted subsequent to Version 5 of the Area Specific Management, to avoid all known mineral tenures.

Source: B.C. MSRM, March 2004; Appendix 11 provides more detail.

Morice LRMP Benefits to the Mineral Sector

The benefits to the mineral sector of the Morice LRMP will stem primarily from the degree to which the Plan provides greater land use certainty to mineral developers, as well as from improvement in community stakeholder communication and development of a community consensus on appropriate land uses. The LRMP reinforces the application of the two zone system for mining in the Morice LRMP area, and contains General Management Direction aimed at maintaining and increasing responsible mineral resource development.

The LRMP also assists mineral resource developers in identifying and spatially locating other values that will need to be considered, under existing legislation, in planning exploration or mining developments.

Impacts of Protected Areas on the Mineral Sector

The planning table attempted to avoid all mineral tenures in establishing the boundaries for protected areas. The boundaries of the proposed Bernie-Shea PA specifically avoided a group of mineral tenures in the Herd Dome polygon, and the boundaries of the Nanika-Kidprice PA were adjusted after the area statistics (reported above) indicated that a small portion of the mineral tenures related to the Berg deposit on the east side of the Nanika-Kidprice PA had been included in the protected area.

The proposed PAs also exclude all developed prospects except for the New Nanik copper deposit, a 16.5 million tonne copper deposit on the western shore of Nanika Lake (by comparison, the Berg copper deposit has 238 million tonnes, although at a slightly lower grade; and the Morrison copper deposit has 71 million tonnes at a better average grade). Tenures associated with the New Nanik copper deposit had lapsed in 2002, but a new set of claims were staked on February 29, 2004 (after Planning Table consensus was reached on the Morice LRMP). The new tenure holder subsequently abandoned the new claims.[33]

The PAs will alienate 5.2% of the High metallic mineral potential lands and 7.9% of the Moderate to High metallic mineral potential lands. This is comparable to the 6.4% of the Morice LRMP area covered by the PAs. Only 1.6% of the ARIS expenditures reported for the Morice LRMP area have occurred in the proposed PAs, and only 5 metallic mineral occurrences (2%) are in the PAs.

The proposed PAs account for a high proportion of the extreme industrial mineral potential (41.7%), but as noted earlier, the Morice LRMP area accounts for only 0.3% of all High/Extreme industrial mineral potential in B.C. (compared to the Morice LRMP area accounting for 1.6% of the B.C. landbase). The distance to major markets or tidewater limits the economic potential of most industrial minerals in the Morice LRMP area, and the industrial mineral resources have not been well explored or evaluated.

It is difficult to assess the value of the metallic mineral potential in the Protected Areas. The PAs proposed by the Morice LRMP include approximately 95,500 hectares of High and Moderate to High metallic mineral potential. This represents 0.25% of the 38 million hectares of High and Moderate to High metallic mineral potential in B.C. One may infer that the alienation of those lands could represent 0.25% of the metal mining employment in B.C., or approximately 10 PYs of employment (between 7.5 PYs or 13 PYs of employment depending on whether one uses the 2001 metal mining employment, or the average employment in the B.C. metal sector between 1980 and 2001).[34]

Table 8 Potential Employment Impacts from Alienation of Metallic Mineral Potential

	B.C.	Impact of PAs from Morice LRMP	
Average Metal Mining Employment - 1980 to 2001	5,164	12.9	FTEs
2001 Employment	3,012	7.5	FTEs
Hectares of High Mineral Potential	19,395,921	31,824	0.16%
Hectares of Moderate to High Mineral Potential	18,862,438	63,704	0.34%
Sub-Total	38,258,359	95,528	0.25%

Based on the impacts per FTE for Huckleberry Mine, the average annual loss of employment of 10 FTEs may represent approximately $0.6 million per year in annual wages and salaries, $1.8 million in lost GDP and $76,000 in average annual net economic value. This would of course not occur in a steady flow but as and when a mine, or mines are developed based on this mineral potential.

In 2003, BriMar Consultants Ltd. and Finisterre Holdings Inc. estimated the value of various mineral tracks for the Coast Information Team (CIT).[35] They estimated the employment, cash flows, B.C. direct taxes, and investment for the mineral tracks in the B.C. Coast, assuming various probabilities. Their report estimates that each hectare of mineral track may generate significant employment, taxes and discounted cash flows, however, it is difficult to relate these results to current or historical employment and mining activity in the metal mineral sector in B.C.[36] The CIT data cannot easily be applied to the Morice mineral potential data to estimate the value of the mineral tracks in the PAs proposed by the Morice LRMP.

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[33] Letter to Mineral Titles Branch, Ministry of Energy and Mines, from Hunter Dickinson Inc., May 27th, 2004.

[34] The B.C. Ministry of Mines reports that the B.C. metal mining sector employed 3,012 people in 2001, the lowest level in 20 years, and less than a third the peak employment of 9,558 people reached in 1981. Over the 1980 to 2001 time period, metal mining employment averaged 5,164 people. Source: B.C. Ministry of Energy and Mines (MEM) Statistics, website accessed April 12, 2004.

Impacts of Area Specific Management Zones and General Management Direction on the Mining Sector

In 2002, the B.C. Government legislated a two-zone system for mining along with a 'single-window' permitting process for exploration and development of mineral resources. The Morice LRMP confirms the two-zone system for mining in the plan area, stating numerous times that mineral exploration and development is permitted anywhere outside of protected areas, subject to measures to limit impacts on other values as outlined in the Mineral Exploration Code and mine development regulations.

The attention paid to the legislated two-zone system in the Morice LRMP, should lead to increased confidence and certainty that mineral resources can be discovered and developed in the plan area. This is likely to take several years to develop, and will depend to a large degree on external factors such as metal and mineral commodity prices.

The No Timber Harvest areas and Other Area Specific management zones cover 29.5% of the Morice LRMP area, and 30.9% of the area's High and Moderate to High metallic mineral potential. Early stage mineral exploration relies to some degree on the development of forestry roads to provide cost effective exploration opportunities. To the extent that the No Timber Harvesting Areas and Other Area Specific management zones limit the development of new roads, there may be some curtailment of exploration opportunity. As noted in the forestry section of this report, however, the No Timber Harvest Areas contain very little operable timber land, and road development for timber harvesting in these areas would not have been extensive even without the LRMP's exclusion from timber harvesting.

The GMD provides management direction to limit the impacts of development on many other resources and values, that could result in adjustments to exploration and mine development plans. For example, although the LRMP recognizes that exploration and mining activity (and any resource development other than forestry) are not required by law to be consistent with visual quality objectives, LRMP established scenic areas and visual quality guidelines are likely to be considered in the exploration or mine development approval process.[37]

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[35] BriMar Consultants Ltd. and Finisterre Holdings Inc., *Economic Gains Spatial Analysis (EGSA) Minerals Sector Study*, Coast Forest Conservation Initiative, Coast Information Team, 2003, 37 pages.

[36] Green, Tom, Rainforest Solutions Project, *Review of the March 2003 EGSA Minerals Sector Study by BriMar and Finisterre*, 2003, 31 pages.

[37] MSRM, *Morice Land and Resource Management Plan, Final Land Use Recommendation, March 31, 2004*, page 54.

Summary of Socio-Economic Impacts on Mining Sector

The Morice LRMP should have no impacts on Huckleberry Mine, the only mineral producing mine currently in operation in the region.

The mining industry will likely benefit from increased land use certainty resulting from the LRMP.

Proposed Protected Areas (PAs) will alienate 5.2% of the High metallic mineral potential and 7.9% of the Moderate to High mineral potential. It is difficult to assess the value of the metallic mineral potential in the PAs, but the alienation of those lands represents 0.25% of the 38 million hectares of High and Moderate to High metallic mineral potential in B.C. The 0.25% of B.C.'s metal mining sector translates to approximately 10 direct PYs, $0.6 million in annual wages and salaries and $0.1 million in net economic value.

The PAs include one developed prospect – the New Nanik copper deposit, a 16.5 million tonne copper deposit on the western shore of Nanika Lake. Recent tenures associated with this prospect have lapsed and/or been abandoned.

2.3 Energy

Oil and Gas

The following table summarizes Area Statistics that show gas only potential and oil and gas potential for the Morice LRMP area.

Table 9 Morice LRMP Area Statistics for Energy Sector

Morice LRMP Area	Hectares	Protected Area	Area Specific	GMD	Total
Gas Only Potential (ha)					
High	0	0%	0%	0%	0%
Moderate	0	0%	0%	0%	0%
Low	13,699	0%	17%	83%	100%
Poor	0	0%	0%	0%	0%
Oil & Gas Potential (ha)					
High	42,791	0%	20%	80%	100%
Moderate	106,624	1%	43%	55%	100%
Low	0	0%	0%	0%	0%
Poor	471,758	10%	47%	44%	100%

Source: B.C. MSRM, March 2004; Appendix 11 provides more detail.

There is currently no oil and gas drilling activity in the Morice LRMP area.

The Morice LRMP Area Statistics show the following:

- The small amount of gas only potential (13,699 ha) located in the northern portion of the Morice LRMP area has a potential rating of 'Low', and none of it is located in protected areas.
- Approximately 41% of the Morice LRMP landbase (621,000 hectares) is rated as having some oil and gas potential, but only 42,791 ha (2.9%) of the area is rated as having high

potential for oil and gas. The balance is rated as having moderate or poor potential.

- None of the high oil and gas potential areas are in proposed Protected Areas.

The existing east/west gas pipeline that runs through the central portion of the Morice LRMP area enhances the economic viability of any discovered gas reserves in the area. The LRMP is not expected to materially encumber the modest oil and gas potential in the plan area.

Hydroelectric Power

The Morice LRMP area includes a significant portion of the Nechako reservoir system created as part of the Kemano hydroelectric power project. This includes Thatsa Lake, Ootsa Lake and Whitesail Lake in the southern part of the Morice LRMP area. The LRMP is not expected to impact the operation of the Nechako reservoir.

Potential future hydroelectric power projects, including micro hydro projects, may be constrained by provisions in the Morice LRMP regarding aquatic ecosystems and water resources. Area specific management for Nanika River specifically prohibits hydroelectric developments on the river. The significance of hydroelectric potential in the Morice LRMP area has not been assessed.

Summary of Socio-Economic Impacts on the Energy Sector

The Morice LRMP is not expected to materially encumber the modest oil and gas potential in the plan area.

The Morice LRMP should not have an impact on the operations of the Nechako reservoir.

The Morice LRMP may have some impacts on the potential for small scale hydroelectric development in the plan area.

2.4 Agriculture

Cattle ranching is the most common form of agriculture in the Morice LRMP area, and access to crown lands for grazing is crucial to the viability of these operations. There are an estimated 16,076 Animal Unit Months (AUMs) of crown land grazing in the Morice LRMP area, or approximately 1.8% of all AUMs in B.C. The number of AUMs has grown 48% since 1993 (from 10,867 AUMs).[38] The economic impacts of the Morice LRMP beef cattle industry are estimated as follows:

- $4 million in production revenues;
- Gross Domestic Product of $0.9 million
- 20 FTEs in direct employment (this excludes indirect and induced employment, and excludes employment in meat processing plant);
- Range fees of almost $36,000; and

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[38] Source: B.C. Ministry of Forests, Morice TSA Socio-Economic Analysis: Executive Summary, January, 1996, http://www.for.gov.bc.ca/hts/tsr1/tsasea/sea/tsa20/httoc.htm

- Net economic value of $0.06 million.

Under base case management, the agriculture sector has identified the following issues to be addressed by the Morice LRMP:

- Loss of grasslands due to forest encroachment,
- Availability of Crown land for agricultural expansion, and
- Availability of Crown range for livestock grazing.[39]

The following table summarizes the distribution of agriculture land values in the Morice LRMP area across the various resource management zones designated in the LRMP.

Table 10 Morice LRMP Selected Area Statistics for Agriculture

Morice LRMP	THLB (ha)	Non-THLB (ha)	Total Crown (ha)	Resource Management Zones		
				Protected Areas	No Timber Harvest & Other Area Specific	GMD
ALR	863	38,503	39,366	0%	20.5%	79.5%
Agricultural Leases	2,240	2,324	4,564	0%	7.4%	92.6%
Range Tenures	72,965	57,852	130,818	0%	7.2%	92.8%
Animal Unit Months	7,869	8,518	16,387	0%	13.3%	86.7%
High Arability Expansion Potential	27,340	25,100	52,439	0%	14.8%	85.2%

Source: B.C. MSRM, February 2004; Appendix 11 provides more detail.

Morice LRMP Benefits to the Agriculture Sector

The Morice LRMP facilitates the expansion of agricultural land and provides management direction to maintain or expand Crown domestic livestock range, improve range productivity, and maintain access to water resources. A target of 22,500 hectares of Crown land to be alienated for agriculture purposes is established as follows:

Table 11 Target Area of Land Available for Expansion of Agriculture Activities

	Maximum Area (ha)	Expansion Rate (ha per 5 year period)
Fulton Lake	2,500	250
Bulkley	10,000	600
Parrott	6,000	400
Morice West	2,000	200
Poplar Lake	1,500	200
Ootsa Lake	500	200
	22,500	

Source: B.C. MSRM, *Morice LRMP Final Land Use Recommendation*, March 31, 2004, page 68.

The Morice LRMP management direction suggests the highest priority lands for agriculture expansion should be arable land outside the THLB, and specifies that "When considering alienating arable land within the THLB for agriculture, ensure that agriculture is the highest and best use of the land."[40] As discussed in the Forest Sector section of this report, the MLM simulation of the take up of agriculture land indicated a significant impact on THLB (6,000 ha over and above what was set aside in TSR2) and long term timber harvest level (decline of 1%), although the take up precedence rules applied for the simulation may not be a good approximation of on the ground practice.[41] Nevertheless, there is some doubt as to whether the avoidance of THLB, or the highest and best use test, can be achieved for the full 22,500 hectares.

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[39] Source: B.C. MSRM, *Morice LRMP Final Land Use Recommendation*, March 31, 2004, page 67.

[40] Source: B.C. MSRM, *Morice LRMP Working Draft*, Version 2.14, page 66.

There are no agricultural lands or identified potential agricultural lands in the proposed Protected Areas. Significant portions of the Agricultural Land Reserve, grazing lands, and lands with high agriculture expansion potential fall within Area Specific Management Zones. Some of these zones (eg. Bulkley River, Swan Lake/China Nose, Nadina River, Morice River) include management direction (water withdrawal, riparian zone rehabilitation, grassland ecosystems, ungulate winter range) that may place some constraint on agriculture activities (the Morice River and Nadina River floodplains were excluded from agriculture expansion in the MLM simulation).[42]

General Management Direction in the Morice LRMP, including provisions for Wildlife and Wildlife Habitat, and Fish and Aquatic ecosystems may also somewhat constrain agriculture activities.

Summary of Socio-Economic Impacts on the Agriculture Sector

There are no range tenures, agricultural leases or Agriculture Land Reserve lands in the proposed Protected Areas.

The Morice LRMP will benefit the cattle ranching sector by targeting 22,500 hectares of additional Crown land to be allocated to agriculture activities, provided that agriculture is the highest and best use of the land.

The Morice Landscape Model sensitivity analysis of agriculture expansion impacts on timber supply indicates that it will be difficult to achieve the maximum agriculture lands expansion without significant impacts on timber supply (up to 1% reduction in long term timber supply). The Morice LRMP suggests that a target of 22,500 hectares of additional land be allocated towards agriculture activities provided that agriculture is the best use of the land.

2.5 Trapping

There are an estimated 62 trapping territories that are either entirely or partially within the Morice LRMP area.

Trapping in the Morice LRMP area generates annual revenues estimated at $87,000. This is based on the average reported harvest for the Morice LRMP area between 1989 and 1998 and 2003 prices for pelts. Appendix 7 provides more detail on these estimates.

Summary of Socio-Economic Impacts on the Trapping Sector

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[41] The priority for choosing land for new alienation in the simulation was primarily proximity to private land. See: *Morice LRMP Scenario Instructions* , updated April 5, 2004, prepared by the Morice Government Technical Team (Review Draft), page 5.

[42] *Morice LRMP Scenario Instructions* , updated April 5, 2004, prepared by the Morice Government Technical Team (Review Draft) pg. 6.

The Morice LRMP will benefit the trapping sector mainly as a result of benefits accruing to the wildlife sector[43]. There may also be some benefits derived from preferential access (public access restrictions) to trapping territories in some areas.

The Morice LRMP maintains physical access for trapping tenures for all "existing and future access routes, and methods of transportation across all land use designations for the purposes of tenure holders access to trap line areas and guide territories"[44]. Trapping tenure holders should not be negatively impacted by the access plans proposed by the LRMP, nor Protected Area designations.

2.6 Botanical Forest Products

Botanical forest products are often described as non-timber based products, generally including any product from the forest other than trees used for the production of lumber and other solid wood products or pulp.[45] The Ministry of Forests estimates that in 1998, the botanical forest products sector in B.C. generated sales revenues of approximately $50 million from the harvest of wild edible mushrooms and $60 million from the sale of floral greens and salal sales, mainly from Vancouver Island. Other botanical forest products include herbal medicines and wildcrafted medicinal herbs.

The botanical forest products sector in B.C. is not regulated, and provides no direct public sector rent in the form of royalties or other crown revenues. The harvesting of botanical forest products in B.C. including the harvesting of wild edible mushrooms in the Queen Charlotte Islands/ Haida Gwaii (QCI/HG), generates significant socio-economic benefits to those involved, but not necessarily to the local communities.

The Morice LRMP recognizes the importance of botanical forest products to First Nations, noting that there are over 130 plant species historically utilized by the Wet'suwet'en people. The Morice LRMP also recognizes the importance of botanical forest products to all local residents for personal use and consumption.[46] The Office of the Wet'suwet'en is developing a berries management plan, which aims to re-establish and enhance huckleberry production to provide for traditional cultural use as well as commercial sale.

The Morice LRMP provides management direction aimed at maintaining or enhancing the distribution and abundance of botanical species over time, maintaining access to important botanical species, limiting impacts to important botanical species and ecosystems to natural disturbance regimes, maintaining or developing organic certification, and specifically maintaining pine mushroom habitat.

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[43] See: Edie A. and Associates, *Environmental Risk Assessment: Morice LRMP Table Final Land Use Recommendation*, June, 2004.

[44] Source: MSRM, *Morice LRMP Final Land Use Recommendation*, March 31, 2004, page 80.

[45] B.C. Ministry of Forests (Sinclair Tedder) and Mitchell Consulting Associates, *Seeing the Forest Beneath the Trees: The Social and Economic Potential of Non-Timber Forest Products and Services in the Queen Charlotte Islands/ Haida Gwaii*, prepared for South Moresby Forest Replacement Account, 2000, 144 pages.

[46] Source: MSRM, *Morice LRMP Final Land Use Recommendation*, March 31, 2004, page 72.

Based on a brief overview of the existing B.C. industry, one can infer that while botanical forest products have important cultural and personal values, the economic benefits of botanical forest products are likely to continue to be minimal to both the local communities and to the Crown.

Socio-economic impacts associated with botanical forest products GMD cannot be assessed in more detail:

- There are no estimates of the size of the area that would be most suitable for botanical forest products and for which the proposed GMD may apply. The Morice LRMP Economic Development Plan recognizes the need to conduct inventories of suitable sites for botanical forest products. Site suitability should pertain to site productivity as well as access.
- Until the suitable sites and areas are identified, any trade-offs between botanical forest products and other values cannot be estimated.

Summary of Socio-Economic Impacts on Botanical Forest Products

The Morice LRMP makes several provisions to maintain or enhance the production of botanical forest products. The Morice LRMP recognizes the importance of botanical forest products to all local residents for personal use and consumption, and their cultural significance to First Nations.

While the Morice LRMP may benefit the development of botanical forest products, and with them significant heritage, cultural and personal values, the economic impacts are likely to be minimal to the local communities and to the province.

3 Assessment of Plan Impacts on Backcountry Tourism

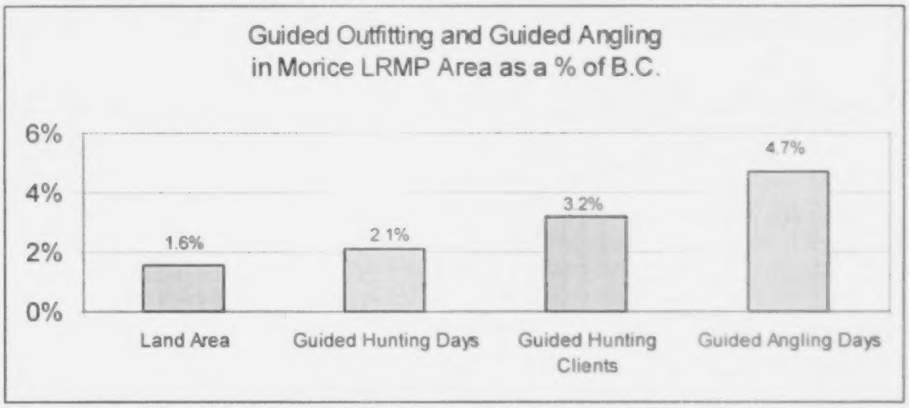
3.1 Overview of Backcountry Tourism

There are three main aspects to mid-country and backcountry tourism in the Morice LRMP area. They include:

- Guide-outfitting (9 guide outfitters with 3 of these having a base or satellite camp in the Morice LRMP);
- Guided-angling (19 to 26 guides: 19 guides operate on the major rivers and lakes in the Morice LRMP and another 7 operate over the length of he Bulkley River, some within the Morice LRMP); and
- Adventure/ Wilderness tourism (5 to 10 operations).[47]

The Morice LRMP area accounts for approximately 2.1% of guided hunting days in B.C. and 4.7% of guided angling days in B.C. (compared to the Morice LRMP area accounting for 1.6% of the total land area of B.C.).

Chart 6 Guide Outfitting and Guided Angling Effort in the Morice LRMP Area



Source: Prepared by Pierce Lefebvre Consulting; Appendix 5 provides more detail.

3.2 Base Case Management Regime

The following lists current management direction in the Morice area that is of particular relevance to the tourism and recreation sectors:

- The Telkwa Caribou Recovery Area covers some 155,247 hectares[48] establishes measures that minimize disturbances to caribou. This includes designating areas that are non-motorized or have motorized restrictions for recreational use for approximately half of that area. Under the Telkwa Caribou Recovery Area, motorized recreational activities are restricted on 3% of the landbase in the winter (44,547 hectares including 33,837 ha of non-motorized during all seasons and 10,711 hectares of restricted access, also during all seasons). In addition, in the summer, a further 7,913 ha of non-motorized access brings the total landbase under motorized restrictions in the summer to 3.5% of the Morice LRMP area.

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[47] See Appendix 5 for details.

[48] Includes the areas 9A, 9B, 9C and 9D of the Telkwa Caribou Range from the Area Statistics provided by MSRM for this project (April 2004); this area corresponds to the Telkwa Caribou Recovery Area map in: Horn, Hannah and Gregory C. Tamblyn, *Morice Planning Area Background Report*, page 37.

- Under the Base Case regime, approximately 730,000 hectares (48% of the total land area) are designated as Scenic Areas, of which 521,000 hectares (35% of the landbase) are classified as highly sensitive, 44,000 hectares (3% of the landbase) as moderately sensitive and 165,000 hectares (11% of the landbase) as having low sensitivity.
- Under the Base Case regime approximately 272,000 hectares (18% of the landbase) are managed under specific Visual Quality Objectives (VQOs).
- The Morice LRUP Zone A established prior to the Morice LRMP, protects the Morice River corridor from timber harvesting, except to address threatened forest health.
- The Granisle (4,034 ha) and Houston (3,511 ha) Community Recreation Forests were established in the 1990s, to be managed primarily for recreation values. They provide trails for horseback riding, mountain biking, walking, hiking, cross-country skiing and snowmobiling. Management for the Houston Community Forest includes motorized access restrictions.
- There are currently three small protected areas for recreation: Red Bluff Park (148 ha) and Topley Landing Park (12 ha) on Babine Lake, and Little Andrews Bay Park (45 ha) on Ootsa Lake.
- The Forest and Range Practices Act (previously the Forest Practices Code) requires consideration of ecological and other values associated with the landbase, including recreation values, in considering approval of Forest Development Plans.

3.3 Area Statistics for Tourism and Recreation

The following table summarizes the distribution of various recreation and tourism values across resource management zones established by the Morice LRMP.

Table 12 Morice LRMP Area Statistics for Tourism and Recreation

Morice LRMP – (Area Specific Management Version 5)	Total Number/ Area (hectares)	Protected Area	No Timber Harvest	Other Area Specific	GMD	Total
Existing Tourism:						
Facilities	29 Fac.	3.4%	10.3%	17.2%	69.0%	100%
Features	234 Fea.	3.8%	19.2%	13.7%	63.2%	100%
Kilometres of Trail	606 km	5.4%	18.8%	22.0%	53.8%	100%
Recreation:						
Non-Motorized All Seasons	90,959 ha	21.9%	22.9%	6.4%	48.8%	100%
Non-Motorized Summer Only	187,512 ha	21.0%	55.0%	6.7%	17.3%	100%
Summer Restricted Motorized	90,272 ha	0.0%	1.7%	17.0%	81.4%	100%
Non-Motorized Winter Only	8,589 ha	0.0%	100.0%	0.0%	0.0%	100%
Tourism Opportunity (ha)						
High	55,877 ha	29.7%	48.3%	11.3%	10.7%	100%
Medium	106,070 ha	7.0%	50.4%	6.2%	36.4%	100%
Low	351,939 ha	6.3%	32.0%	10.1%	51.6%	100%
Recreation Opportunity Spectrum						
Roaded Modified	694,548 ha	0.1%	3.0%	8.7%	88.2%	100%
Roaded Natural	50,067 ha	0.0%	35.8%	17.0%	47.2%	100%
Primitive	189,087 ha	26.3%	72.5%	0.9%	0.4%	100%
Rural	22,653 ha	0.0%	0.8%	12.6%	86.5%	100%
Semi Primitive Motorized	159,718 ha	10.7%	20.8%	13.0%	55.5%	100%
Semi Primitive Non-Motorized	291,105 ha	5.2%	29.7%	10.5%	54.6%	100%
Urban	5,976 ha	0.0%	0.0%	18.6%	81.4%	100%

Source: MSRM, Appendix 11 provides more detail.

3.4 Impacts of the Morice LRMP on Existing Backcountry Tourism

This section examines the impacts of the Morice LRMP that are particular to guide-outfitting, guided angling and adventure tourism.

3.4.1 Guide-Outfitting

The *Morice Planning Area Background Report* identifies nine guide-outfitters with territories that overlap the Morice LRMP boundaries[49], with three of these having a base or satellite camp in the Morice LRMP area. The *Morice LRMP Base Case Socio-Economic Assessment* states that there are thirteen guide-outfitters whose territories cover part of the four Wildlife Management Units (WMUs) that overlap the plan area, but these four WMUs cover 3.9 million hectares, which is 2.5 times the size of the Morice LRMP area.

Guide-outfitting in the Morice LRMP area generates an estimated 21 Full Time Equivalents (FTEs) of direct employment. Other impacts are as follows:

- Industry revenues of $1.81 million;
- GDP of $0.64 million from direct activities; and
- Net economic value of $0.16 million.

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[49] Source: Horn, Hannah and Gregory C. Tamblyn, *Morice Planning Area Background Report*, page 75.

These data represent an estimate of the activities that depend on the Morice LRMP landbase, not the broader area covered by the four WMUs that overlap the Morice LRMP area.

Increasingly, guide-outfitters in the Skeena region provide other guided experiences in addition to hunting, with hunting days now accounting for 55% of total guided days and guided fishing and other products accounting for the other 45%. Hunting revenues, however, continue to account for 73% of total revenues. Appendix 5 provides more data on guide outfitting in the Skeena region.

The Morice LRMP maintains existing use by guide outfitting and trapping tenure holders, across all land use designations:

The plan objectives relating to guide-outfitting are to:
1. Maintain sustainable populations of game species and guide outfitting quotas;
2. Maintain guide outfitting opportunities across the plan area; and
3. Maintain the level and type of physical access to guide territories.

The plan objective to maintain physical access to guide territories defines this access as follows: "retain over time, all existing and future access routes and methods of transportation (pickups, snowmobiles, horses, boats, aircraft, ATVs, dog sled) across all land use designations for the purpose of tenure holder's access to trap line areas and guide territories." [50]

The Morice LRMP is expected to have a very positive impact on existing guide-outfitting operations:

Protected Areas (PAs)

The final LRMP scenario proposes PAs that represent 6.4% of the Morice LRMP area; the two largest PAs, the Nanika-Kidprice and Burnie-Shea Lakes PAs, account for approximately 90% of the total PAs being proposed.

One guide-outfitter's territory includes the Nanika-Kidprice PA, and another includes the Burnie-Shea Lakes PA. These two guide-outfitters will have continued motorized access to support guiding operations in these two PAs.

The guiding territory that includes the Nanika-Kidprice PA also includes the Atna Lake Ecological Reserve, the only PA where motorized access will be restricted even for guide-outfitters, but this area is only 973 hectares.

The value of guide-outfitting base camps and cabins (or their sites) in the proposed PAs may be enhanced through future exclusivity. Guide-outfitters have expressed concern that in spite of access exemptions, park management provisions may constrain their operations.[51]

No Timber Harvest Areas

The No Timber Harvest areas cover some 20% of the Morice LRMP area; the two largest areas,

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[50] Source: MSRM, *Morice LRMP Final Land Use Recommendation,* March 31, 2004, page 80.

[51] Nanika Guiding (Jim Tourond), letter to the Morice LRMP Table, January 2nd, 2004.

Tahtsa-Troitsa and Morice Lake, account for approximately 92% of all No Timber Harvest areas specified in the Morice LRMP. The No Timber Harvest areas are in the southern part of the Morice LRMP area and are adjacent to the Nanika-Kidprice and Burnie Shea Lakes PAs.

Four guiding territories overlap these two areas, including the two guide-outfitters whose territories include the Nanika-Kidprice and Burnie Shea Lakes PAs.

The No Timber Harvest areas and the proposed PAs are expected to have a very positive impact on the existing guide-outfitting operations by maintaining wildlife habitat, maintaining the wilderness hunting experience and providing guide-outfitters with continued motorized access.

Other Area Specific Management Zones and General Management Direction (GMD)

Guide-outfitters will benefit through other area specific and general management direction aimed at protecting hunting, trapping and tourism opportunities, as well as maintaining or enhancing wildlife habitat[52]. Motorized access restrictions in several parts of the plan area should benefit guide-outfitters in their ability to provide a consistent hunting experience (particularly given the exemption from these restrictions for their activities).

Summary of Morice LRMP Impacts on Guide-Outfitting

The Morice LRMP is expected to have a very positive impact on existing guide-outfitting operations.

The guide-outfitting sector will benefit from GMD aimed at maintaining tourism and recreation values such as scenic areas, and the functionality of facilities, features and trails. The guide-outfitting sector will also benefit from GMD aimed at maintaining wildlife habitat. Moreover, guide-outfitters will benefit from the preservation of wildlife and tourism values in the proposed Protected Areas, the No Timber Harvest areas and other Area Specific Management Zones.

The Morice LRMP maintains motorized access for guiding activities in all areas except the Atna Ecological Reserve.

The growth potential for guide-outfitting operations is limited by preferred wildlife species populations, and will likely result more from increasing the quality of the hunting experience than from increasing the volume of hunter clients. There may be volume driven growth potential in the non-hunting products offered.

If guide-outfitting operations grow through the non-hunting product portion of their business, access provisions that do not conform to the area specific restrictions on recreation activities may become an issue.

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[52] See: Edie A. and Associates, *Environmental Risk Assessment: Morice LRMP Table Final Land Use Recommendation*, June, 2004.

3.4.2 Guided Angling

In 1998/1999, there were 19 guides operating on the major rivers and lakes in the Morice Area, and an additional 7 angling guides that operated over the length of the Bulkley River. A total of 2,978 guided days are granted to these operators (excluding the Bulkley River). Guided angling in the Morice LRMP area provides the following socio-economic benefits:

- 13 FTEs of direct employment;
- Industry revenues of $2.3 million;
- GDP of $0.9 million; and
- Net economic value of $0.2 million.

Appendix 5 provides more detail on these estimates.

The Morice LRMP has established Area Specific Management zones and Protected Areas along all the rivers and lakes in the Morice LRMP area that are Classified Waters[53], and where guided angling takes place, except for Babine Lake. For all Classified Waters other than Babine Lake, there will be constraints on timber harvesting along the shores of the classified lakes and rivers as well as various measures to protect fish habitat.

For Babine Lake, the Morice LRMP has established marine parks (Protected Areas) that cover 5,750 hectares of land and water, and a relatively small Area Specific Management zone around the shore of the east arm of Babine Lake. The Morice LRMP has also developed general management direction that is aimed at enhancing and protecting fish habitat, aquatic ecosystems and riparian areas. Moreover, the Morice LRMP establishes a framework and direction for the development of a Lakeshore Management Strategy. This includes identifying key values and management goals associated with individual lakes (e.g. ecological, wilderness, quality and general/family recreation oriented lakes), and establishing a framework for the development of a Lakeshore Management Strategy.

The following table lists the Classified Waters in the Morice LRMP area along with the type of management zones established in the Morice LRMP that include these waters.

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[53] The B.C. Government developed the Classified Waters Licensing System to preserve the unique fishing opportunities provided by streams and lakes, which contribute significantly to the province's reputation as a world class fishing destination. The classified waters of B.C. include forty-two (42) highly productive trout streams which are classified as either **Class I** or **Class II** depending on level of use as well as some lakes. Additional licenses are required for fishing in classified waters. Source: Ministry of Water, Land and Air Protection web site, accessed April 19, 2004.

Table 13 Morice LRMP Management Zones for Guided Angling Rivers and Lakes

Classified Waters in the Morice LRMP Area	Number of Guides Granted Rod Days	Number of Days Granted	Morice LRMP Designations Protected Area (PA), Area Specific Management (ASM), No Timber Harvest ASM (NTASM)		Hectares
Morice River	3	433	Morice River	ASM	25,181
Nanika River	3	260	Nanika River	ASM	1,915
Nadina River	1	50	Nadina River	ASM	6,016
Babine Lake	14	1,595	Babine East Arm	ASM	2,714
Morice Lake	7	480	Morice Lake	NTASM	108,359
Nanika Lake	4	95	Nanika-Kidprice	PA	52,824
Kidprice Lake	3	65	Nanika-Kidprice	PA	
Bulkley River	Not available	Not available	Bulkley River	ASM	7,578
Total		2,978			

Source: Prepared by *Pierce Lefebvre Consulting* based on MSRM data. Appendix 5 provides more detail.

The management direction in the various zones containing Classified Waters is not entirely incremental to Base Case. In particular, the Morice LRUP Zone A established prior to the Morice LRMP already protected the Morice River corridor from timber harvesting except to address threats to forest health.[54] Also, the large Nadina LRUP established prior to the LRMP included what is now the Nadina River ASM zone, although in 1996, the Chief Forester determined that the Nadina LRUP did not require consideration as a special management unit as it was adequately represented through the various netdowns and in the other management zones.[55]

Summary of Morice LRMP Impacts on Guided Angling

The guided angling sector will benefit from the Morice LRMP GMD mainly through the various maintenance and enhancement measures for fish habitat[56] and recreational features, as well as through more comprehensive scenic area designation and management. Area Specific Management zones and protected areas should help maintain or enhance the fishing experience on Classified Waters.

Angling guide operations should benefit from the establishment of the Nanika-Kidprice protected area, particularly if they are eligible tenure holders exempted from motorized access restrictions.

Future expansion of angling guide operations is constrained by rod day quotas issued by the Federal Department of Fisheries and Oceans.

3.4.3 Other Adventure Tourism

In addition to the guide-outfitters and guided angling businesses that operate in the Morice LRMP area, there are another 5 or 6 commercial tourism operations that offer backcountry multi-day tours in the Morice LRMP area. These may include backcountry skiing, snowmobiling tours, canoeing/kayaking tours, hiking and trail riding tours. The 5 or 6 commercial tourism operators in the Morice LRMP area provide the following socio-economic benefits:

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[54] Horn, Hannah and Gregory Tablyn, *Morice Planning Area Background Report*, page 54.

[55] B.C. Ministry of Forests, *Morice Timber Supply Area Rationale for AAC Determination*, 1996.

[56] See: Edie A. and Associates, *Environmental Risk Assessment: Morice LRMP Table Final Land Use Recommendation*, June, 2004.

- 9 FTEs of direct employment;
- Industry revenues of $0.63 million;
- GDP of $0.38 million; and
- Net economic value of $0.05 million.

The adventure tourism sector in the Morice LRMP area (excluding guide-outfitting and guided angling) currently accounts for relatively modest socio-economic impacts. Appendix 5 provides more detail on these estimates.

The Morice LRMP will have a positive impact on the wilderness/ backcountry tourism sector:

- The proposed PAs and No Timber Harvest areas include 78% of the High Tourism Opportunity areas and 23% of the tourism features. The Morice LRMP expresses objectives and management direction for all PAs, which encourages economic opportunities for small, locally based commercial recreation.

- The PAs and No Timber Harvest areas include only 14% of existing tourism facilities, but Other Area Specific Management zones include 17% of existing tourism facilities (compared to 8.7% of the total landbase). Most existing tourism facilities are scattered along lakes and rivers throughout the Morice LRMP area, including popular areas such as Babine Lake, the Morice River, the Nadina River and along the Bulkley River.

- All tourism facilities will likely benefit from the GMD guidelines for scenic areas.

The adventure tourism and backcountry sector will also benefit:

- 99% of the Recreation Opportunity Spectrum (ROS) Primitive areas will be either in PAs or No Timber Harvest areas; and

- 35% of the ROS semi-primitive non-motorized areas are in PAs or No Timber Harvest areas (compared with those zones covering 27% of the Morice LRMP area).

The Morice LRMP has designated some areas as non-motorized during all seasons while others are non-motorized in the summer or in winter. This is reviewed in more detail in the impacts of the Morice LRMP on the recreation sector.

The Morice LRMP GMD has established objectives for considering the interests of wilderness lodges and tourism businesses in resource development plans:

- No loss of integrity and functionality of features within a 200 metre management zone surrounding the feature,
- No loss of integrity and functionality of facilities within a 1000 metre management zone for lodges and 500 metre management zone for cabins associated with tourism operations,
- No loss of integrity and functionality of trails within a 200 metre management zone on each side of the trail, and
- Consultation requirements for any development activities that approach these management zones.

By contrast, the Forest Practices Code did not "...require specific consideration of the interest of business owners adjacent to forested Crown Lands"[57] in the development and approval of Forest Development Plans.

Summary of Morice LRMP Impacts on Adventure Tourism

The adventure tourism sector will benefit from the Morice LRMP GMD mainly through the management consideration of facilities, trails, and features as well as through management for visual resources.

Consultation provisions included in the Consultation GMD and in the Guidelines for Features, Facilities and Trails Management should be particularly beneficial to the tourism sector.

3.5 Impact of the Morice LRMP on Tourism Potential

- In 2002, the Office of the Wet'suwet'en, Meredith Associates and other consultants conducted a major study of tourism opportunities for the Morice Forest District.[58] The study identifies the following products as the best short term options for outdoor recreation based tourism products:
  - Historical/cultural winter adventure;
  - Freshwater-non-motorized activities including canoeing, rafting, drifting and river activities; this includes activities along the Bulkley and Morice Rivers;
  - Summer trails (non-motorized), with access to significant features and viewscapes, and links to lodges and huts;
  - Road tours;
  - Air tours;
  - Destination lodge;
  - Hut system for winter and summer recreation; and
  - Lake tours with link to fishing, cultural activities, lodges and hut system.

All of the above tourism products have the potential to include a cultural and heritage component. The Tourism Opportunity Study lists three specific Wet'suwet'en First Nations tourism initiatives including the development of a destination marketing organization/tourism bureau, the development of historical trails, and the development of a rafting product that would start at Morice Lake and continue for 12 days through the Wet'suwet'en and Gitxsan Territories.

This Tourism Opportunity Study provides maps of high suitability areas for the various potential recreation and tourism opportunities. While not definitive, these maps assist in providing a spatial representation of opportunities that can then be matched to the Morice LRMP.

- Hut system suitability is highest for the following areas:
  - West Telkwa range, part of which is now in the proposed Burnie-Shea Lakes PA;
  - the East Telkwa range, which remains under GMD;
  - the North Morice Range and the RedSlide Mountain, which are now both in No Timber Harvesting areas.

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[57] Forest Practices Board, *Timber Harvesting and Fishing Lodge Interests near Morrison Arm,* Complaint Investigation 000284, January 2002, page 9.

[58] Office of the Wet'suwet'en, Meredith & Associates et al, *Morice Forest District Tourism Opportunity Study*, 2002.

- Summer non-motorized trail suitability mirrors the hut capability map except that there are a few additional areas that are also identified as being highly suitable. They include:
  - Morice Mountain, which will remain under GMD;
  - Nadina Mountain, which will now become a small Protected Area, adjacent to the larger Nadina-Owen Area Specific Management Zone;
  - the Sibola Range, which will be partly in the No Timber Harvest areas with the balance under GMD; and
  - the Herd Dome region, which will be a No Timber Harvesting area.

- The Tourism Opportunity Study highlights areas that have high suitability for new destination lodges. These include:
  - Area along Babine Lake: the Morice LRMP has established various marine parks along Babine Lake which represent 5,750 hectares; also, the GMD for the Morice LRMP and the Lakeshore Management Strategy will help protect the functionality of existing recreation and tourism facilities and features;
  - Area along the Morice River south of Houston towards Morice Lake: this will now be part of the Morice River Buffer/ Core Area Specific Management zone;
  - Area along the southern portion of Nanika Lake: this will be part of the proposed Nanika-Kidprice PA, and as a result, it will be important from a tourism standpoint that the protected area status of the Nanika Kidprice PA allows the selected development of commercial tenures;
  - Area along the southern part of Morice Lake and around the South Morice Range: this will be part of the No Timber Harvest area; and
  - Area in the East Telkwa range, which will remain under GMD.

- The Tourism Opportunity Study highlights areas that have high suitability for snowmobile activities. They include:
  - The Topley to Granisle McKendrick Pass Snowmobile route, which will remain under GMD; and
  - The Dungate Meadows area, which also remains under GMD.

  The study identifies many other areas that are of moderate suitability for snowmobile activities including the West Telkwa ranges, the East Telkwa ranges, Sibola ranges and many others. Some of these will now be in No Timber Harvesting areas.

The Morice LRMP provides an access management plan for motorized and non-motorized recreational activities which covers many of the areas listed above. This is discussed in more detail in the next section.

Summary of Morice LRMP Impacts on Potential for Tourism

The Morice LRMP proposes various Protected Areas, No Timber Harvesting areas and Area Specific Management zones, as well as an extended inventory of Scenic Areas, that will allow areas that are particularly suitable for tourism activities to develop in the future.

How much of this potential will be realized will depend on markets and other factors.

4 Assessment of Plan Impacts on the Recreation Sector

4.1 Overview of the Recreation Sector

The Morice LRMP area supplies an estimated 100,000 recreation days per annum to people engaging in backcountry recreation activities. This excludes visits to local lakes for boating, swimming and other front country activities. This estimate is very approximate and is based on the data sources documented in Appendix 6, which describes the recreation sector in the Morice LRMP area in more detail.

There are two basic approaches to assessing the economic significance of recreation activities including:

- Level of expenditures by participants; and
- Net economic value, represented by the participants' willingness to pay over and above the level of expenditures.

The following table summarizes the key recreation activities occurring in the Morice LRMP area and where available, provides data on level of activity, direct expenditures and net economic value. Estimates of net economic value for various outdoor activities range from $8 per day to well over $50 per day. The following table summarizes estimates of daily net economic value for resident hunting, resident angling, wildlife viewing and other outdoor activities.

Table 14 Economic Significance of Recreation Activities in the Morice LRMP Area

Type of Activity	Estimated Recreation Days	Estimated $ Spent per Day
Resident Hunting	10,000 to 16,500 hunter days	$50
Resident Angling	52,500 angling days	$29
Snowmobile Activities	12,000 recreation/visitor days	non-locals: $85 to $225 per day
Camping	20,000 camping visits	Not available
Non-Motorized & Other	Not available	$45
Total Recreation Days	94,500 to 101,000 recreation days	

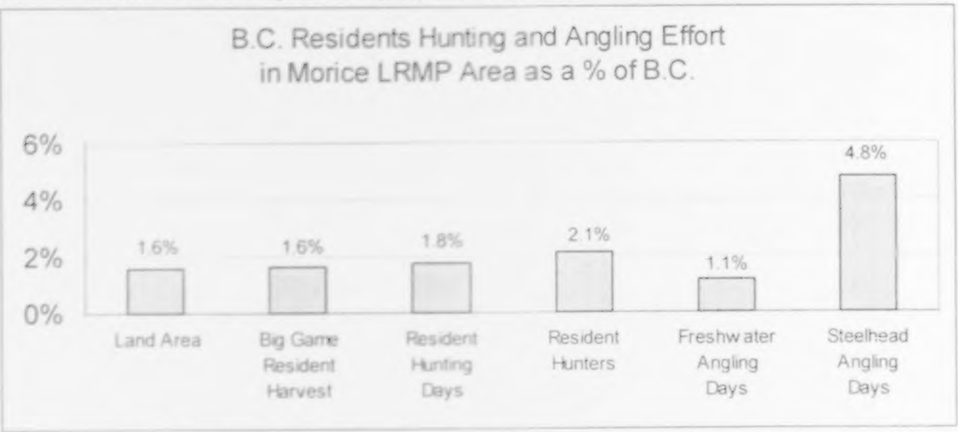
Recreation	Net Economic Value/ Willingness to Pay	
Depends on Activity and Source of Data	B.C. MWLAP estimates values in $50 range; Environment Canada survey estimates values in $10 to $20 range	100,000 days @$10 per day yields $1 million; @$50 per day yields $5 million

Source: Prepared by Pierce Lefebvre Consulting, Appendix 6 provides more detail.

There are some 100,000 backcountry recreation days occurring in the Morice LRMP area. Valuing recreation days is difficult, but various studies have pegged the willingness to pay at between $10 per recreation day and $50 per recreation day, which results in a net economic value ranging between $1 million and $5 million.

Steelhead angling in the Morice LRMP area is particularly significant in a provincial context, accounting for approximately 4.8% of the steelhead angling effort in B.C. General freshwater angling, and hunting by B.C. residents, are also fairly significant given the remoteness of the area to large population centres.

Chart 7 Estimated Hunting and Angling Effort by B.C. Residents



Source: Prepared by Pierce Lefebvre Consulting based on various estimates. Appendix 5 provides more detail.

There may be opportunities for the recreation sector in the Morice LRMP area to expand. The *Morice LRMP Economic Development Plan*[59] identifies various activities that may have robust growth in the future including house boating, snowmobile tours/destination snowmobiling, commercial recreation site development, First Nations heritage site development and guided tours of historic mines/prospecting tours. On the other hand, recreation is often dependent on the size of the local and regional populations, which in turn may limit opportunities for growth. Moreover, limited entry hunting and rod day quotas for fishing may limit expansion opportunities. Appendix 1 provides more detail.

4.2 Base Case Management Regime

The management direction in the Morice area that is of particular relevance to the backcountry tourism sector applies also to the recreation sector. This includes:

- The Telkwa Caribou Recovery area establishes measures that minimize disturbances to caribou. This includes restricting motorized recreational activities for approximately 3% of the Morice LRMP area in the winter, and 3.5% in the summer; (of particular relevance to recreation, the polygons 9B (Starr Creek) and 9D were already non-motorized under the Telkwa Caribou Area, and the polygon 9C was designated as non-motorized in the summer);[60]
- Scenic area designation on approximately 48% of the Morice LRMP area and VQOs on approximately 18% of the landbase;
- The Morice LRUP Zone A which protects the Morice River corridor from timber harvesting;

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[59] Source: B.C. MSRM, Skeena Region et al., *Morice Land & Resource Management Plan Economic Development Action Plan (EDAP)*, 2003, 177 pages.
[60] Horn, Hannah and Gregory C. Tamblyn, *Morice Planning Area Background Report*, 2000, page 37.

- Two Community Recreation Forests, one in Granisle and one in Houston that are managed primarily for recreation values (0.5% of the landbase);
- Three small protected areas, two on Babine Lake and one on Ootsa Lake; and
- The Forest and Range Practices Act (previously the Forest Practices Code) which requires consideration of ecological and other values including recreation values.

4.3 Impacts of the Morice LRMP on the Recreation Sector

The Morice LRMP will have a generally positive impact on the recreation sector.

- Recreation GMD provides specific direction to maintain facilities, features and trail functionality, and outlines consultation requirements where impacts from resource development may occur.
- The Nanika-Kidprice portage trails, which consist of three portage trails linking a series of lakes will be protected in the Nanika-Kidprice Protected Area.
- The integrity and functionality of the Grease Trail between Fort Babine and Talkla Lake will be maintained with a 100 metre No timber Harvest buffer on either side of the trail, and a 70% mature forest retention direction between 100 metres and 500 metres on either side of the trail.[61] Also, the Grease Trail will be designated as non-motorized in the summer.[62]
- Resident hunting (between 10,000 hunter days and 16,500 hunter days) will benefit from measures to maintain and enhance wildlife habitat and wildlife populations[63], as well as measures in some Area Specific Management zones that will help to maintain a wilderness hunting experience.
- Resident anglers (approximately 52,500 angling days) will benefit from the protection of recreation values along the Classified Waters in the Morice LRMP area (i.e. Morice river, Bulkley river, Nadina river, etc.); resident anglers will also benefit from the marine parks along Babine Lake and from the GMD that aims to protect recreational features.
- Campers in the Morice LRMP area (estimated at 20,000 camping days) will benefit from the Morice LRMP. Camping is offered at 22 of the 25 Ministry of Forests (MOF) recreation sites in the Morice LRMP area. The MOF recreation sites will benefit from GMD for recreation that aims to maintain or improve the integrity and functionality of features, facilities and trails. Also, of the 25 MOF recreation sites, 11 will be located in protected areas or in Area Specific Management zones (including those on the shores of Babine Lake, the Morice River, Morice Lake, the Nadina River, Owen Lake and the Twinkle-Horseshoe chain).[64]

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[61] MSRM, *Morice LRMP Final Land Use Recommendation*, March 31, 2004, pages 181 & 182.

[62] The Morice LRMP proposes that the Grease Trail be non-motorized in the Summer as per Polygon 1 in the *Morice LRMP Motorized / Non-Motorized Recreation Access* map, MSRM Skeena web site, March 23, 2004.

[63] See: Edie A. and Associates, *Environmental Risk Assessment: Morice LRMP Table Final Land Use Recommendation*, June, 2004.

[64] Based on a visual review of the locations of MOF recreation sites and the proposed Protected Areas and Area Specific Management zones in the Morice LRMP, February 2004.

- Snowmobiling (estimated at 12,000 visitor days per year) will not be significantly impacted by non-motorized restrictions as some of the highly popular areas such as the Telkwa range, the Dungate area, the Sibola range and the Topley-Granisle Trail network, will remain mainly open to motorized activity in the winter. Some areas have been earmarked as non-motorized, and snowmobiling users will be restricted in those areas. This includes some of the northern portions of the Telkwa Mountains area, the Atna River and the Little Whitesail area. While some areas in the Telkwa Mountains will be non-motorized throughout the year, most of those areas were already deemed non-motorized under the Telkwa Caribou Recovery Plan.

In addition, the access management plan for motorized and non-motorized activities will help enhance the overall benefit to recreation users by allowing the area to offer a variety of experiences to potential users. The impact of the Morice LRMP has been to expand the area that is restricted to non-motorized activities (The Morice LRMP Motorized/Non-Motorized Recreation Map shows the polygons that are proposed for non-motorized access only). In particular:

- The Burnie-Lake area on the western boundary of the Morice LRMP area has become a non-motorized area (all season), and south of that polygon is the Burnie South/Morice Range, which will be non-motorized in the summer.

- The Telkwa Caribou Area has now become a non-motorized area during the summer, whereas parts of it were designated integrated use prior to the Plan.

- A non-motorized area during summer has been added to the east of the Telkwa Caribou Area.

- Various non-motorized areas have been added in other parts of the Morice LRMP area mainly to help protect ecological values and backcountry non-motorized recreation. The key areas that will now be non-motorized throughout the year are the Atna River and Morice Mountain-Silverhorne Lake. The key areas that will now be non-motorized during the summer include: the Nanika-Kidprice and most of the area south of Tahtsa Lake. Some areas will be motorized throughout the year, but in summer, motorized use will be restricted to hard surface trails. This includes the Dome Mountain area north of Houston, the Matzehzel Mountain and the Swan Lake/China Nose area.

- The Little Whitesail South area at the southern tip of the Morice LRMP area will be designated non-motorized in winter.

The intent of the Morice LRMP is to provide a variety of high quality outdoor recreation opportunities. It is difficult to determine the net impacts on recreation of restricting motorized access in some areas. The Telkwa Range accounts for an estimated 5,000 snowmobiling days, or 42% of total estimated snowmobiling days in the Morice LRMP area (Appendix 6), and some of those visitors will be negatively impacted by the motorized restrictions. On the other hand, there may be offsetting benefits associated with non-motorized winter recreation. Some of the areas that are designated as having a high degree of suitability for non-motorized activities and hut system suitability are also highly suitable for motorized activities.

The Morice LRMP designates areas as specifically motorized, with the Sibola polygon being the largest. The Sibola Range is an important snowmobiling area with an estimated 2,250 visitor days per year, or approximately 19% of total estimated snowmobiling days. The Dungate area and Topley to Granisle areas, accounting for 3,500 snowmobiling days per year (29%), will also remain open to snowmobiling and other motorized activities.

Whether the benefits to the recreation sector will lead to an increase in the number of recreation days will depend on a variety of factors including:

- The regional population;
- The popularity of the Morice LRMP area recreational opportunities;
- The popularity of recreation activities for which the Morice LRMP area is well known, including freshwater angling, big game hunting, snowmobiling, ski touring and boating; and
- Camping and other facilities that may be established in the region over time.

Summary of Morice LRMP Impacts on Potential for Recreation

The Morice LRMP will maintain the significant recreation values associated with the proposed Protected Areas (for example, the Nanika-Kidprice PA and the Nadina Mountain PA), the No Timber Harvesting areas and the Area Specific Management zones.

The recreation sector will also benefit from the GMD guidelines aimed at protecting facilities, features and trails, as well as the management direction for scenic areas.

The Morice LRMP designates some areas for non-motorized uses, which may enhance the overall recreation values by enhancing the backcountry experience. While the non-motorized use areas may alienate some of the motorized recreation users, the access management plan for motorized and non-motorized activities will help enhance the overall benefit of recreation users by allowing the region to offer a variety of high quality recreation experiences.

While the Morice LRMP will benefit the recreation sector, whether these benefits translate into an increase in the number of recreation days will depend on various factors relating to population, what facilities are established and maintained, and the relative popularity of the Morice LRMP area recreational opportunities.

5 Assessment of Plan on Communities/ Settlements

5.1 Overview of Plan Area Communities/ Settlements

The District Municipality of Houston (Houston) and the Village of Granisle are the two main communities in the Morice LRMP area:

- Houston has approximately 3,600 residents and derives 57% of its basic income from the forest sector (Appendix 1); other important economic sectors include the public sector, other basic/construction, tourism, agriculture and mining.
- Granisle was a community of 1,430 residents in 1981, but the closure of two local mines resulted in a drop in population to the 350 people who now reside in the community. Granisle is currently primarily a retirement and recreational community.

Other unincorporated communities such as Topley, Topley Landing and Tatchet bring the Morice LRMP area population to approximately 5,200 people (2001 Census data). Appendix 1 provides more detail.

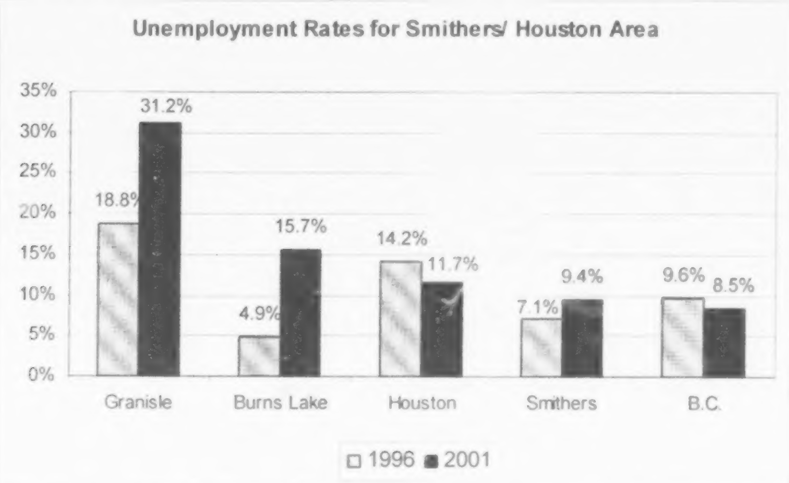
Other nearby communities that depend on Morice LRMP resources, but that are outside the Morice LRMP boundaries include Smithers, Telkwa, Burns Lake and various First Nations communities. Smithers, Telkwa and Burns Lake have a combined population of 8,727 people (2001 Census).

The Morice LRMP area derives 56% of its basic sector income from the forest sector, 7% from mining, 2% from tourism, and 2% from agriculture and food. The public sector accounts for 12% of basic income, although this sector in turn depends on the size of the population and economic base of the region. Other basic sectors, transfer payments and non-employment income account for the balance of basic sector income.

Recreation activities that depend on the backcountry contribute very significantly to the lifestyle offered by communities in and around the Morice LRMP area.

Unemployment rates are one indicator of the economic well being of a region. The following graph shows that the unemployment rate in Granisle in 2001 was 31.2%, up from 19% in 1996, a reflection of the difficult employment situation in that community following the closure of the local mines. The chart also shows how the unemployment rates in Burns Lake, Houston and Smithers exceed the B.C. average. In 2001, the unemployment rate remains higher than the B.C. average for the community of Houston, but at 11.7%, it has improved significantly since reaching 14.2% in 1996.

Chart 8 *Unemployment Rates for Smithers/ Houston Area, 1996 and 2001*



Source: B.C. Stats, *Community Facts*, various communities, 1996 and 2001 (based on Canada Census data).

5.2 Forestry Impacts of Morice LRMP on Plan Area Communities/ Settlements

The Morice Landscape Model simulations indicate that timber harvesting levels may have to decrease by 7.4% from base case levels, to remain sustainable, while implementing Morice LRMP management direction. As noted earlier, applying a MOF harvest flow policy scenario to the 7.4% downward pressure on timber supply from the LRMP, as well as the 8.1% 'falldown' anticipated in TSR2, indicates that timber supply can be held at current levels for one decade. To accomplish this, the influence of the 'falldown' to long term harvest levels begins two decades sooner, starting in decade 3 rather than in decade 5.

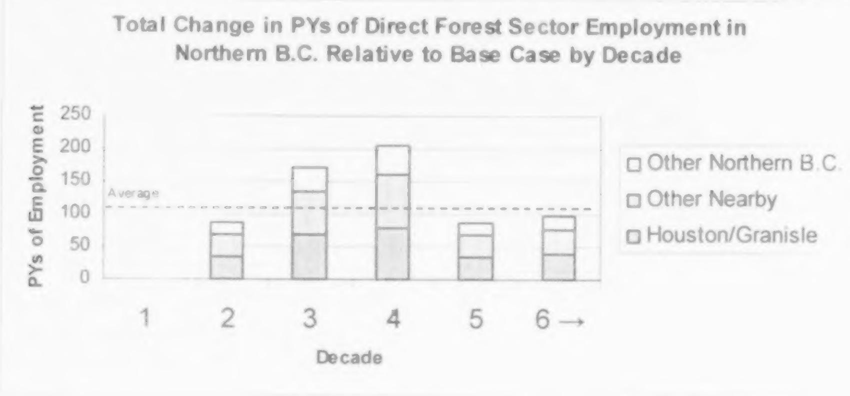
Under the harvest flow projection, there would be no loss of forest industry employment in the first decade, but this would be followed by employment levels that are lower than the base case by 88 direct PYs in the second decade, 171 PYs in the third decade, 204 PYs in the fourth decade, 88 PYs in the fifth decade before settling at 99 PYs lower than base case in decades 6 and beyond.

Impacts on forest industry harvesting and silviculture employment would likely be felt mainly in Houston/Granisle, but the impacts on wood processing activities may occur primarily outside the Morice LRMP area. The two major sawmills in Houston are very large and efficient, and the loss of Morice TSA timber volumes may impact other mills in the region, as more timber is directed from outside the TSA to the Houston mills. Mills in Houston already obtain approximately one third of their timber from outside the Morice TSA.

Of the direct FTEs that would be at risk, 78% would likely be in Smithers/Houston and the surrounding area (mostly logging, silviculture and wood products manufacturing) and 22% would be in other northern B.C. communities (mostly pulp and paper milling jobs).

This is demonstrated in the following chart, and in Table 15.

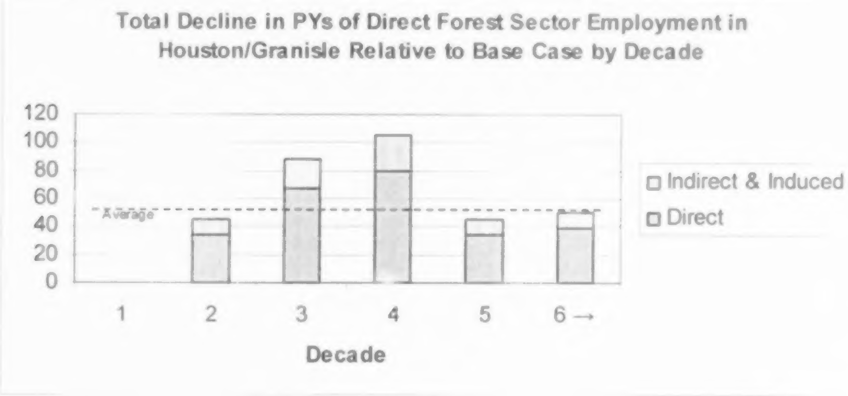
Chart 9 *Change in Direct Forest Sector Employment Levels Relative to Base Case*



Any job losses in harvesting and silviculture would likely be felt mainly in Houston/Granisle (an average of 43 direct FTEs over the first 6 decades). After considering the indirect and induced impacts, the average loss of 43 direct FTEs in Houston/Granisle might result in an average loss of approximately 56 direct, indirect and induced FTEs in those communities over the first 6 decades of the projection (2% of the existing labour force). This would probably not be sufficient by itself to significantly alter the sustainability of the community although at the margin it could have an impact on local schools and perceived choices for employment.

The harvest flow policy scenario indicates that none of these job loses would occur in the first 10 years of the projection. By decade 4, employment levels would be lower by 105 PYs, which represents approximately 3.8% of the plan area labour force of 2,770 people[65]. If the wood processing job losses occur in Houston, rather than outside the plan area as expected, then those two communities will be affected by up to 7% of the labour force in Decade 4.

Chart 10 *Change in Employment in Houston/Granisle Relative to Base Case*



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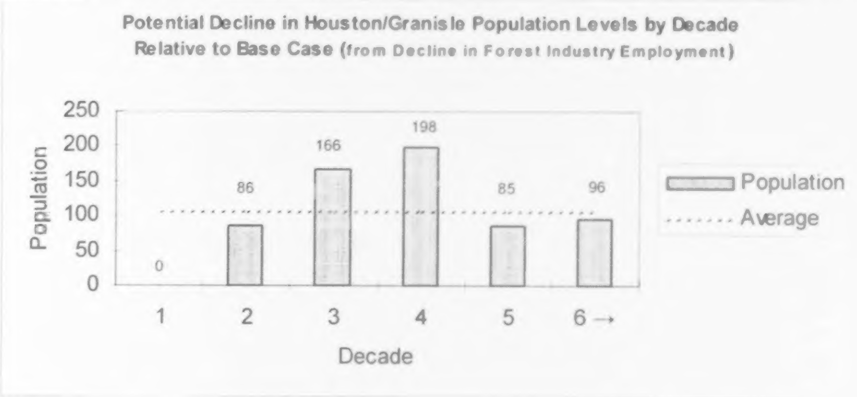
[65] Source: Pacific Analytics Inc., *Morice LRMP Base Case SEA*, page 17)

The employment decline in decades 3 and 4 (caused partly by acceleration of the timber supply 'falldown') would become more serious to the community social and physical infrastructure. On the other hand, delaying the impacts of harvest reduction until decade 2 will provide more time for the communities to plan for the decline in employment in the forest sector, and possibly begin to experience increases in employment in sectors expected to benefit from the LRMP.

In communities such as Granisle and Houston, a loss of employment often results in the out-migration of workers and their families. The existing population to labour force ratio is 1.89 persons per individual in the labour force (based on the 2001 ratio of population (5,343) to labour force (2,770) for the Morice LRMP area). If harvest flows were held at a constant lower level through the first 6 decades, lower employment levels would result in a decline in population levels of 105 people. With uneven harvest flows, the decline will likely approximate 200 people in decade 4 when the loss of employment will be greatest relative to the base case (assuming wood processing employment declines are not experienced in Houston).

The next chart shows population impacts for Granisle/Houston. The population impacts will be more significant than those shown on the graph if some or all of the wood manufacturing jobs lost are in Houston. As mentioned above, this assumes that lumber mills in other nearby communities will be affected before the mills in Houston.

Chart 11 Change in Houston/Granisle Population Levels by Decade Relative to Base Case



The following table shows the detailed forest employment impact data.

Table 15 Employment Impacts from Decline in Timber Supply from the Morice LRMP Area

	Current PYs from Morice LRMP	Decade						Annual Average for 6 Decades
		1	2	3	4	5	6 and thereafter	
Harvest ('000 m³)								
Harvest Reduction		0	120	233	277	119	134	147
Decade to Decade Change		0	6.1%	6.1%	2.6%	0.0%	0.9%	0
Change Relative to Base Case		0.0%	6.1%	11.9%	14.1%	6.6%	7.4%	7.7%
Direct Employment Reduction (PYs)								
Decade to Decade Change		0	88	83	33	0	11	
Total Change Relative to Base Case		0	88	171	204	88	99	108
Total Change in Direct Employment Relative to Base Case (PYs)								
Harvest/ Silv. Houston/Granisle	567	0	35	67	80	34	39	43
Harvest/ Silv. Nearby Communities	76	0	5	9	11	5	5	6
Wood Products Proc. Region	487	0	30	58	69	30	33	37
Sub-Total	1,131	0	69	134	160	69	77	85
Pulp & Paper - Northern Interior	312	0	19	37	44	19	21	23
Other B.C.	0	0	0	0	0	0	0	0
	1,442	0	88	171	204	88	99	108
Employment Impact on Houston/ Granisle - Total Change Relative to Base Case								
Direct	567	0	35	67	80	34	39	43
Indirect/ Induced	175	0	11	21	25	11	12	13
Total	742	0	45	88	105	45	51	56
% of Labour Force for Houston/Granisle	26.8%	0.0%	1.6%	3.2%	3.8%	1.6%	1.8%	2.0%
Population Impact on Houston/ Granisle - Total Change Relative to Base Case		0	86	166	198	85	96	105

Notes: Does not add due to rounding.

The key assumptions are as follows:

1. The majority of the harvesting and silviculture employment impacts would likely occur in Houston and Granisle, with the remainder occurring in nearby communities outside of the Morice LRMP area.
2. Wood processing employment impacts would likely occur in other nearby communities, but may occur at least partially in Houston; the pulp and paper processing employment impacts would also likely occur in Northern Interior communities (Kitimat, Prince George or Prince Rupert).
3. The employment impact in the rest of the province would be a decline in indirect and induced employment.

Source: Based on forest sector data in Appendix 2.

5.3 Other Impacts of the Morice LRMP on Plan Area Communities/ Settlements

The Morice LRMP will likely have a generally positive impact on tourism and recreation values, which should support the marketability and strategic diversification initiatives of Houston and Granisle. It is difficult, however, to estimate the growth potential of the backcountry tourism sector in the Morice area and the extent to which the Morice LRMP will contribute to that growth. Backcountry tourism (including guided hunting and angling) accounts for 43 FTEs of direct employment in the Morice LRMP area (Appendix 5), and a very substantial expansion of that sector would be required to offset the potential decline in harvesting and silviculture employment noted above.

Metal mining is an important element (82 local direct FTEs) in the limited economic diversity that currently exists in the Morice LRMP area. The Morice LRMP should have no impact on current mining operations (Huckleberry Mine), but may enhance the likelihood of future mineral exploration and development through certainty of access to 94% of the land base (and 95% of high mineral potential lands). The benefit from increased land use certainty is counterbalanced somewhat by the alienation of mineral resources in the Protected Areas to the mining sector.

Measures of community sustainability or community resilience go beyond purely economic considerations. The Morice & Lakes IFPA has developed a list of indicators and prepared an assessment of community sustainability for the Morice and Lakes IFPA region. This framework is useful to illustrate some of the potential community impacts of the Morice LRMP in table format.

Table 16 Impacts of Morice LRMP on Long Term Community Sustainability/Resilience

Indicators of Community Sustainability/ Community Resilience	Impact of Morice LRMP	Costs / Benefits
Human Capital • includes education, trades training, perceived choices for employment, and education opportunities	The suggested timber flow policy suggests that there will be no loss of forest employment in decade 1, but this will require significant losses in decades 3 and 4 rather than in decade 5 where the 'falldown' effect was expected to take place under TSR-2. The loss of employment in decade 2 would probably not be sufficient by itself to significantly alter the sustainability of the community although at the margin it could have an impact on local schools and perceived choices for employment. While the harvest flow projection may impact the Houston/Granisle workforce by as much as 7% in Decade 4, delaying the impacts of harvest reduction until decade 2 will provide more time for the communities to plan for the decline in employment in the forest sector.	c
Economic Capital • includes income, labour force recruitment and retention, access to government services, transportation services, etc.	There will likely be no impact in Decade 1. Thereafter, negative impact on forest industry employment is unlikely to be compensated by growth in other sectors at least in the medium term; wood processing employment impacts may be felt outside the LRMP area as sawmills in Houston are very large and efficient.	C
Social Capital • includes number of community volunteer organizations, in/out migration, etc.	The loss in forest employment after decade 1 may result in people leaving the Morice LRMP area. Even harvest flows would result in a 2% drop in local employment, which would result in out-migration of up to 96 people until decade 5 where the 'falldown' would come into effect. Under the harvest flow projection, the lower level of local employment envisioned for decade 4 may result in almost 200 people leaving local communities.	c
Ecological Integrity	Increase in protected areas and No Timber Harvesting zones as	B

Indicators of Community Sustainability/ Community Resilience	Impact of Morice LRMP	Costs / Benefits
• including area of protected areas, air quality, visible stewardship, species of concern	well as other area specific and general management direction targeting ecological integrity[66].	
Economic Vitality • including economic diversity, income leakage, incidence of low income, unemployment, entrepreneurship, etc.	May lead to increased economic diversity, but also increased unemployment for forest sector workers.	b/c
Civic Vitality • including satisfaction with local governance, volunteerism, etc.	Greater sense of local control over the use of land and resources; stakeholder communication and consensus.	B
Physical and Mental Health • including health care, substance abuse, etc.	The loss in forest sector employment may lead to some increase in health issues associated with unemployment.	c
Recreational Opportunities • including the quality of outdoor and indoor recreational opportunities	Provides for an ongoing variety of high quality outdoor recreation experience, and addresses developing conflicts among motorized/non-motorized recreation.	B

c = modest costs, C = significant costs, b = modest benefits, B = significant benefits
b/c = a mix of costs and benefits

Summary of Morice LRMP Impacts on Community Sustainability

Community capacity building, local empowerment, resource inventory information and stakeholder consensus are key benefits of the LRMP to plan area communities.

The Morice LRMP is likely to have an overall 7.4% negative impact on timber supply. Applying a MOF harvest flow policy scenario to the 7.4% downward pressure on timber supply from the LRMP, as well as the 8.1% 'falldown' anticipated in TSR2, indicates that timber supply can be held at current levels for one decade. To accomplish this, however, the influence of the 'falldown' to long term harvest levels begins two decades sooner, starting in decade 3 rather than in decade 5.

The direct forest sector FTEs at risk in harvesting and silviculture are likely to occur in Houston/Granisle. The loss of wood processing employment may be felt in other nearby communities rather than in Houston. Throughout the 6 decades and beyond, some 78% of direct FTEs at risk are likely to be in Smithers/Houston and surrounding area (logging, silviculture and processing) and 22% in other Northern communities (pulp and paper). Regional employment levels will be lower by 171 direct forest sector FTEs in decade 3 and 204 direct forest sector FTEs in decade 4 (compared to the average decline of 108 direct forest sector FTEs over the first 6 decades).

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[66] For an assessment of the ecological benefits see: Edie A. and Associates, *Environmental Risk Assessment: Morice LRMP Table Final Land Use Recommendation*, June, 2004.

Under the harvest flow policy scenario, there would be no employment loss in Houston/Granisle in decade 1. Employment levels would then be lower than under the Base Case by 45 direct, indirect and induced PYs of employment in decade 2, 88 PYs in decade 3 and 105 PYs in decade 4 (this compares to an average of 56 PYs if harvest flows were held at a constant lower level throughout the 6 decades). Impacts would be greater if the loss of wood processing jobs associated with reduced timber supply occurs in Houston (up to 7% of the Houston/Granisle labour force).

The corresponding negative impact on population levels for Houston/Granisle range between 0 in Decade 1 and 198 people in Decade 4, for an average of 105 people throughout the first 6 decades of the projection.

The Morice LRMP will benefit the tourism sector, but a doubling in existing backcountry tourism activities would be required by decade 2 to offset the minimum loss of 45 FTEs in Houston/Granisle that could result from the decline in timber supply. By decade 3, the backcountry tourism sector would have to be approximately 3 times greater than what it is today to offset the decline in forest sector employment projected for that decade.

The impacts on community resilience are mixed, with benefits such as greater ecological integrity, greater economic diversity, greater local governance and the maintaining of recreation values, counterbalancing the socio-economic costs associated with the jobs at risk.

6 First Nations

6.1 Overview of First Nations Communities

The socio-economic analysis recognizes that both First Nations and non-First Nations communities depend on the same land based resources in the Morice LRMP area for wildlife, fisheries, forestry, mining, tourism etc. However, First Nations values, rights, and circumstances are often quite different than those of the rest of the population. This section, as well as Appendix 9 provide an overview of specific First Nations concerns in the Morice LRMP area that have not already been covered in other sections of the Socio-Economic Analysis.

Five First Nations have declared interests in traditional territories in the Morice LRMP area under the tripartite treaty negotiation process: Lake Babine (Nat'oot'en) - Stage 4; Office of the Wet'suwet'en – Stage 4; Carrier-Sekani – Stage 4; Cheslatta Carrier – Stage 3 and Yekooche – Stage 4. The Office of the Wet'suwet'en has been a full participant in the Morice LRMP planning process, and more information is available on Wet'suwet'en interests and concerns than is available for the other First Nations or Tribal Councils. Although the Office of Wet'suwet'en abstained from voting on the consensus agreement it was not done to block the consensus. Rather, there remain a number of outstanding issues within six of the 26 LRMP categories that can only be dealt with at the government to government forum following close of the main LRMP Table. The Office of the Wet'suwet'en have indicated that they remain committed to seeing the LRMP process through to completion through this forum.

The Bulkley Nechako Regional District includes approximately 41,000 people of which approximately 6,000 are of First Nations ancestry (B.C. Stats, based on 2001 Census Canada data (Appendix 1 provides more detail on the BNRD population data):

- The Office of the Wet'suwet'en estimates that it represents over 5,000 Wet'suwet'en people; of these, 2,362 people were registered in 2002 under the Hagwilget Village or Moricetown groups with Indian and Northern Affairs Canada.

- The Lake Babine Nation has over 2,051 members (INAC 2002); the Lake Babine Nation communities within or on the border of the Morice LRMP include Tachet (pop. 86 – Census 2001) and Fort Babine (pop. 77 – Census 2001).

- The Carrier Sekani Tribal Council (CSTC) represents several member bands in treaty negotiations (population of 12,000 estimated in Statement of Intent) including the Burns Lake Indian Band (INAC pop. 88) and the Wet'suwet'en First Nation (INAC pop. 208); Statement of Intent boundaries for the CSTC cover some 95,000 square kilometres of B.C. including two thirds of the Morice LRMP area.

- The Cheslatta Carrier Nation comprises some 286 registered band members (INAC 2002) centered on the south shore of Francois Lake.

- The Yekootche First Nation has 175 registered band members (INAC 2002), most of whom reside near Stuart Lake to the east of the Morice LRMP area.

First Nations communities are increasingly active in the forest industry, through various types of timber tenures and joint venture manufacturing operations. The Office of the Wet'suwet'en is actively pursuing eco-cultural tourism opportunities through the development of tourism trail networks, and have identified several areas of opportunity including Morice Lake, Owen Lake, Nadina Mountain, Nanika-Kidprice, Thautil River, China Nose, Nadina River, McQuarrie Lake, Burnie Lakes and Atna Lake.

First Nations have a vital economic and cultural interest in salmon populations and fish habitat in the Morice LRMP area, in wildlife populations supporting hunting and trapping activities, as well as in botanical forest products and culturally significant ecosystems.

First Nations concerns which may be addressed by the Morice LRMP include:
- The rate of road development and timber harvesting
- Degradation or destruction of cultural heritage sites
- Degradation of culturally significant ecosystems and botanical forest products
- Degradation of fish and wildlife habitat
- Preservation of opportunities for eco-cultural tourism development

6.2 Base Case Management Regime

Some of the key elements of the base case management regime pertaining to First Nations values and interests are as follows:

- The Supreme Court of Canada decision in the Delgamuukw case in 1997 (started by the Gitxsan Nation and the Wet'suwet'en Nation in 1984) confirmed the existence of aboriginal title in BC. The title is a right to the land itself, not just the right to hunt, fish or gather, and when dealing with Crown land, the government must consult with and may have to compensate First Nations whose rights are affected.[67]

- Two landmark rulings in the BC Court of Appeal, Haida and Taku, confirm the provincial government must properly consult with and accommodate the interests of First Nations, pre-treaty, before proceeding with development on their traditional territories.[68]

- Cultural sites dated prior to 1846 are protected under the Heritage Conservation Act.

- The Morice Forest District has developed a policy for managing pre-1846 and post-1846 culturally modified trees.

- An April 2000 political accord between The Office of the Wet'suwet'en, Canada and British Columbia, commits them to work together on land, resource and economic development. Initiatives under the accord have focused on the forest sector, tourism, land-use planning and fisheries. Flowing from it, a protocol agreement brought together four local forest companies to work collectively to develop forestry-related economic initiatives for and with the Wet'suwet'en.

- The evolving Wet'suwet'en Territorial Stewardship Plan includes a cultural heritage database and GIS spatial analysis at the House Territory level.

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[67] Source: *A Lay Person's Guide to DELGAMUUKW*, BC Treaty Commission, http://www.bctreaty.net/files_2/pdf_documents/delgamuukw.pdf

[68] Source: BC Treaty Commission Web Site : http://www.bctreaty.net/files_2/issues_forestry.html#2

- The Forest and Range Practices Act objective set by government for cultural heritage resources is to conserve, or, if necessary, protect cultural heritage resources that are (a) the focus of a traditional use by an aboriginal people that is of continuing importance to that people, and (b) not regulated under the *Heritage Conservation Act*.

- A co-management agreement between The Office of the Wet'suwet'en and Houston Forest Products, to manage the 'Nadina Petition Area'.

6.3 Morice LRMP Impacts on First Nations

This section summarizes the distribution of some First Nations cultural values across the various resource management zones designated in the Morice LRMP as well as the impacts of GMD, PAs and Other Area Specific Management zones on First Nations.

6.3.1 Area Statistics for First Nations Cultural Values

Area Statistics were run against two sets of archaeological data:

- The Office of the Wet'suwet'en database of cultural trails and sites, covering the southern 74% of the Morice LRMP area up to approximately 15 kilometres north of Topley.
- The Archeological Overview Assessment (AOA) data, which includes known sites, as well as mapped areas of high, moderate, or low risk of finding an unknown archaeological site. The AOA is based on field confirmed data, input from First Nations and other inventories and has been used by major licensees and others when developing timber harvesting plans.[69]

The actual distribution of First Nations sites and trails across the Morice LRMP landscape may not be completely represented by this data. The Office of the Wet'suwet'en database is thought to be about 75% complete, and the AOA data is added to as new sites are discovered. There may be some bias (particularly with the AOA data) in the data collection towards more developed areas, with more remote or difficult to access sites or trails being under represented.

Table 17 Morice LRMP Resource Management Zones and Archaeological Values

Morice LRMP – (Area Specific Management Version 5)	Total Area (hectares)	Protected Area	No Timber Harvest	Other Area Specific	GMD	Total
Wet'suwet'en Cultural Heritage						
Kilometres of Trail	1,115 km	8.0%	10.0%	25.8%	56.1%	100%
Sites	97 sites	12.4%	15.5%	37.1%	35.1%	100%
Archaeological Overview Assessment						
High Risk of Finding Unknown Site (ha)	391,331 ha	5.6%	15.8%	9.0%	69.6%	100%
Sites	366 sites	1.1%	6.6%	14.8%	77.6%	100%

Source: B.C. MSRM, March 2004; Appendix 11 provides more detail.

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[69] Source: Horn, Hannah and Gregory C. Tamblyn, *Morice Planning Area Background Report*, pages 41 and 42.

6.3.2 *Impacts of General Management Direction*

Several elements of the Morice LRMP general management direction package should benefit the particular values and interests of First Nations.

- Cultural Heritage GMD includes provisions to reinforce base case conservation and preservation of archaeological sites and cultural heritage resources, as well as to maintain or restore First Nations access to cultural heritage resources and traditional use areas.

- Botanical Forest Products GMD includes objectives and associated management direction to maintain or enhance the distribution, abundance and access to culturally important botanical species. There is also a provision to manage for organic certification of culturally important botanical species.

- Consultation GMD provides for a consultation framework that would operate in addition to Provincial requirements for consultation with First Nations. First Nations representatives have indicated that while consultation is generally beneficial, it comes with some costs in terms of capacity to deal with issues requiring consultation.

- Ecosystem GMD, including management for biodiversity, water resources, fish/fish habitat, and wildlife/wildlife habitat generally supports First Nations values and interests.

- Recreation, Visual and Tourism GMD provide support for First Nations interests in pursuing economic opportunities to develop various types of tourism products.

6.3.3 *Impacts of Protected Areas and Area Specific Management Zones*

Protected Areas can shield First Nations cultural heritage values from industrial development, but they can also constrain some types of commercial development that First Nations may wish to pursue. The AOA database shows very few (1.1%) cultural heritage sites in the Protected Areas proposed by the Morice LRMP, while The Office of the Wet'suwet'en database indicates a higher proportion of sites (12.4%) and trails (8.0%) in Protected Areas than the 5.9% (ASM Version 5) of the total land base in Protected Areas.

The Morice LRMP expresses objectives and management direction for all Protected Areas, which should guide the development of individual management plans for each Protected Area. Included in these objectives are the maintenance and protection of cultural heritage values, recognizing hunting and angling as an acceptable use, and encouraging economic opportunities for small, locally based commercial recreation. This management direction for Protected Areas fits well with the concerns, interests and aspirations of First Nations noted above.

Protected areas with cultural heritage values as a significant factor in their candidacy include Burnie–Shea Lakes (Tazdli Wiyez Bin), Nadina Mountain (specific management direction for cultural heritage), and Old Man Lake (specific management direction for cultural heritage).

Area Specific Management (ASM) zones are classified into two types for this analysis, No Timber Harvest areas and Other Area Specific Management zones. The No Timber Harvest zones provide a higher level of protection of First Nations cultural heritage values of these two types. The area statistics suggest that known First Nations cultural heritage values are underrepresented in the No Timber Harvest zones, compared to the 20.6% (ASM Version 5) proportion of the total land base in No Timber Harvest Areas. No Timber Harvest Areas with particular emphasis on First Nations cultural heritage values include Morice Lake (high fisheries values in the Morice watershed are integral to the Wet'suwet'en people and their culture), Swan Lake – China Nose, Nadina River floodplain, Grease Trail 100 metre core, Babine East Arm 30metre reserve zone, Morrison Lake 30metre reserve zone, and Nanika River floodplain.

Other Area Specific Management zones are typically managed for high biodiversity emphasis, mature and old seral stage targets and/or access restrictions. These management provisions should help to maintain or preserve culturally significant ecosystems and other First Nations values.

The area statistics indicate that known Wet'suwet'en cultural heritage sites (37.1%) and trails (25.8%) in particular are very well represented in the Other Area Specific Management zones, relative to the 8.7% (ASM Version 5) of the total land base in these zones. Areas with particular emphasis on First Nations values include Nadina/Owen (to be managed to respect Office of the Wet'suwet'en cultural values), Nanika River buffer, Morrison Lake 500 metre management zone, Grease Trail 500 metre buffer, and Nadina River 500 metre buffer.

Wet'suwet'en House Territories

The Wet'suwet'en Territorial Stewardship Plan[70] is concerned with the management of cultural and ecological values across 38 Wet'suwet'en house territories, 22 of which are substantially within the Morice LRMP area. The table below gives some indication of how the Morice LRMP area specific management zones overlap each of the house territories, and the degree to which each house territory benefits from additional protection (over and above GMD) of ecological and cultural values.

Clan	House Territory (1)	Morice LRMP Zonation (2)	Additional Protection (3)
Gilseyu	C'iniggit Nenikekh G2	Entirely NTH or PA	High
Gilseyu	Yin Bi Wini G3	Mostly GMD; ASM (Twinkie-Horseshoe); some NTH	Low
Gilseyu	Wesel Bin G4	Partly NTH; partly GMD	Moderate
Gilseyu	Talbits Kwah G6	Partly NTH; partly Thaitil –Gosnell ASM; some GMD	High
Gilseyu	Tac'its'olh'en G7	Mostly GMD; some Nadina River ASM	Low
Gilseyu	Gguzih Keyikh G8	Some NTH; remainder GMD	Moderate
Gilseyu	Tsec'ulh Tesdliz Bin G9	Mostly NTH; small amount of GMD	High
Laksilyu	Tse Zul L2	Some PA; some Bulkley River ASM; mostly GMD	Moderate
Laksilyu	'Ilh K'il Bin L3	Partly ASM (Matzehtzel Mtn. And Bulkley River); rest GMD	Moderate
Laksilyu	Nelgi'l'at L7	Mostly PA; some ASM and GMD;	High
Laksilyu	Nilgi Cek L9	Some ASM; remainder GMD	Low
Laksamishu	Lho Kwah S2	Entirely NTH	High
Laksamishu	C'idi To Stan S3	Mostly GMD; some ASM	Low
Laksamishu	Ggusgi Be Wini S4	Mostly GMD; some Bulkley River ASM	Low
Laksamishu	Misdzi Kwah S5	Entirely GMD;	Low

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[70] Office of The Wet'suwet'en, *The Wet'suwet'en Territorial Stewardship Plan: A First Nations Cultural Heritage Initiative*, updated October 2003.

Clan	House Territory (1)	Morice LRMP Zonation (2)	Additional Protection (3)
Tsayu	Tlhdzi Wiyez Bin T1	Mostly PA; some NTH; small amount of GMD	High
Tsayu	Dets'inegh T2	Mostly GMD, small amount of NTH	Low
Tsayu	Nelhdzi Tezdli Bin T3	Entirely GMD	Low
Gitdumden	Lhudis Bin W2	Some NTH; some PA; some ASM (Nanika River, Morice River); about half GMD	Moderate
Gitdumden	Bi Wini W4	Partly ASM (Nadina-Owen, Morice River, Morice Mtn.);partly GMD	High
Gitdumden	Bikh C'idilyiz Ts'anli W5	Mostly GMD, small amount of ASM (Morice River)	Low
Gitdumden	Ts'in K'oz'ay W6	Mostly GMD, portions of 4 different ASM zones	Low

Notes:

1. Source; Office of the Wet'suwet'en Web Site: http://www.wetsuweten.com/wet/ho_map2.htm, April 2004
2. PA = Proposed Protected Area, NTH = No Timber Harvest Area, ASM = Other Area Specific Management, GMD = General Management Direction
3. *Pierce Lefebvre Consulting* subjective assessment of the degree to which the area specific management zones provide additional protection for first nations cultural and ecological values, over and above general management direction provisions.

Summary of Impacts on First Nations

The Morice LRMP than should better accommodate first Nations values, interests and aspirations than base case management.

Cultural Heritage GMD reinforces the base case conservation of archaeological sites and cultural heritage resources. Other GMD that will benefit First Nations pertains to botanical forest products, consultation, recreation and ecosystems.

The objectives for the proposed PAs to maintain and protect cultural heritage values, recognize hunting and angling as acceptable use, and encourage economic opportunities for small commercial backcountry tourism ventures, are consistent with First Nations values and concerns.

Many of the Area Specific Management (ASM) zones provide specific management direction for First Nations cultural heritage values, while others are managed for high biodiversity, seral stage and access restrictions, which are also consistent with First Nations values and concerns.

There are 22 Wet'suwet'en house territories that are substantially within the Morice LRMP area. The Morice LRMP Protected Areas and Area Specific Management zones provide a high degree of protection (additional to GMD) for cultural heritage values in 7 of these house territories, and a moderate degree of protection in another 5. Moreover, each Wet'suwet'en clan has at least one house territory that has a high degree of additional protection of cultural heritage values.

7 Integration of Socio-Economic and Environmental Assessment

This section of the report provides a brief summary of the results of the Environmental Risk Assessment for the Morice LRMP final land use recommendation, as well as an integrated perspective on the expected socio-economic and environmental impacts of the plan.

7.1 Environmental Risk Assessment Summary

The BC Ministry of Sustainable Resource Management commissioned A. Edie and Associates to undertake an Environmental Risk Assessment (ERA) of the Morice LRMP[71] to compare the levels of risk to environmental values under LRMP management direction, relative to the risk levels existing under base case management.

The ERA focuses on three main issues:

- The extent to which ecosystems are protected from industrial activity in proposed Protected Areas and No Timber Harvest Areas,
- The extent to which industrial activities on the landscape are expected to lead to deviation from natural disturbance patterns or the Range of Natural Variation (RNV) for the Morice landscape, and
- The extent to which industrial and recreation activities are expected to lead to changes in habitat availability/suitability for wildlife species, plant species and aquatic species.

7.1.1 Ecosystem Representation

Ecosystem representation in Protected Areas and No Timber Harvest areas is assessed at both the plan area level (Morice LRMP boundaries – 1.5 million hectares) and the regional level (the area covered by all ecosections that have any significant overlap with the Morice LRMP area – 5.5 million hectares). The following table compares ecosystem representation under base case management and Morice LRMP management for two classifications of ecosystems. Ecosection classifications are based on climatic and physiographic characteristics, while Biogeoclimatic Zones are based on vegetation characteristics.

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[71] Edie A. and Associates, *Environmental Risk Assessment: Morice LRMP Table Final Land Use Recommendation*, June, 2004.

Table 18 Regional and Morice LRMP Area Ecosystem Representation

Ecosystem Category	Regional Representation				Morice LRMP Area Representation			
	Hectares (000)	Base Case Goal 1 PAs	With Morice LRMP PAs	With Morice LRMP PAs & NTHAs	Hectares (000)	Base Case Goal 1 PAs	With Morice LRMP PAs	With Morice LRMP PAs & NTHAs
Ecosections[1]								
Babine Upland*	2,041	3.7%	3.9%	3.9%	416	0.0%	1.4%	1.5%
Bulkley Basin*	1,320	3.0%	3.0%	3.5%	251	0.0%	0.1%	2.8%
Nechako Upland	741	70.5%	70.9%	70.9%	147	0.0%	1.7%	2.0%
Bulkley Ranges*	608	0.0%	9.6%	26.6%	445	0.0%	13.1%	36.3%
Kimsquit Mountains	763	22.5%	25.8%	50.9%	222	0.0%	11.5%	97.7%
Biogeoclimatic Zones[2]								
Alpine Tundra	492	26.0%	32.6%	58.2%	98	0.0%	17.9%	90.1%
Coastal Western Hemlock	203	15.9%	19.2%	37.4%	45	0.0%	14.4%	95.8%
Engl. Spruce Sub-Alp Fir	1,010	25.8%	30.2%	42.2%	465	0.0%	12.8%	49.6%
Mountain Hemlock	159	28.2%	29.1%	33.3%	14	0.0%	14.1%	100.0%
Sub Boreal Spruce*	3,602	9.5%	9.8%	10.2%	880	0.0%	1.2%	3.0%

1. Does not include small portions of the Manson Plateau, Nass Mountains, and Kitimat Ranges ecosections in the Morice LRMP area.

2. The parkland forest subzones are included with the Alpine Tundra zone.

* = Less than 10 % representation in Base Case

PAs = Protected Areas. NTHAs = No Timber Harvesting Areas.

Source: Supplemental data supplied by A. Edie and Associates subsequent to publication of the Environmental Risk Assessment report for the Final Land Use Recommendation.

Proposed PAs and No Timber Harvest Areas under the Morice LRMP add significantly to regional representation of the Bulkley Ranges and Kimsquit Mountains ecosections. Babine Upland and Bulkley Basin ecosections, which have relatively low representation under the base case, would not receive significantly greater representation under the Morice LRMP.

All biogeoclimatic zones have significant representation under the base case, with Sub Boreal Spruce (SBS) being the most extensively occurring zone in the region and the least represented. The Morice LRMP will not contribute significantly to general SBS representation, but it will make a significant contribution by providing enhanced protection for a particular subzone and variant within the SBS zone (red listed cottonwood – red osier forests on the Morice River floodplain).

7.1.2 Risk to Environmental Values

Levels of risk to environmental values are expressed using constructed scales (eg. Low, Moderate, High) and are assessed using a combination of subjective professional judgement and computer simulation tools. The Morice Landscape Model[72] provided 250 year simulations of landscape conditions, which were used to assess the expected long term impacts of LRMP management direction on various environmental values.

A summary of the risk assessment, by environmental value for Base Case Management and the Final Land Use Recommendations, is presented in the following table.

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[72] Gowland Technologies et al., *Morice Landscape Model*, December 2, 2003.

Table 18 Regional and Morice LRMP Area Ecosystem Representation

Ecosystem Category	Regional Representation				Morice LRMP Area Representation			
	Hectares (000)	Base Case Goal 1 PAs	With Morice LRMP PAs	With Morice LRMP PAs & NTHAs	Hectares (000)	Base Case Goal 1 PAs	With Morice LRMP PAs	With Morice LRMP PAs & NTHAs
Ecosections[1]								
Babine Upland*	2,041	3.7%	3.9%	3.9%	416	0.0%	1.4%	1.5%
Bulkley Basin*	1,320	3.0%	3.0%	3.5%	251	0.0%	0.1%	2.8%
Nechako Upland	741	70.5%	70.9%	70.9%	147	0.0%	1.7%	2.0%
Bulkley Ranges*	608	0.0%	9.6%	28.6%	445	0.0%	13.1%	36.3%
Kimsquit Mountains	763	22.5%	25.8%	50.9%	222	0.0%	11.5%	97.7%
Biogeoclimatic Zones[2]								
Alpine Tundra	492	26.0%	32.6%	58.2%	98	0.0%	17.9%	90.1%
Coastal Western Hemlock	203	15.9%	19.2%	37.4%	45	0.0%	14.4%	95.8%
Engl. Spruce Sub-Alp Fir	1,010	25.8%	30.2%	42.2%	465	0.0%	12.8%	49.6%
Mountain Hemlock	159	28.2%	29.1%	33.3%	14	0.0%	14.1%	100.0%
Sub Boreal Spruce*	3,602	9.5%	9.8%	10.2%	880	0.0%	1.2%	3.0%

1. Does not include small portions of the Manson Plateau, Nass Mountains, and Kitimat Ranges ecosections in the Morice LRMP area.

2. The parkland forest subzones are included with the Alpine Tundra zone.

* = Less than 10 % representation in Base Case

PAs = Protected Areas. NTHAs = No Timber Harvesting Areas

Source: Supplemental data supplied by A. Edie and Associates subsequent to publication of the Environmental Risk Assessment report for the Final Land Use Recommendation.

Proposed PAs and No Timber Harvest Areas under the Morice LRMP add significantly to regional representation of the Bulkley Ranges and Kimsquit Mountains ecosections. Babine Upland and Bulkley Basin ecosections, which have relatively low representation under the base case, would not receive significantly greater representation under the Morice LRMP.

All biogeoclimatic zones have significant representation under the base case, with Sub Boreal Spruce (SBS) being the most extensively occurring zone in the region and the least represented. The Morice LRMP will not contribute significantly to general SBS representation, but it will make a significant contribution by providing enhanced protection for a particular subzone and variant within the SBS zone (red listed cottonwood – red osier forests on the Morice River floodplain).

7.1.2 Risk to Environmental Values

Levels of risk to environmental values are expressed using constructed scales (eg. Low, Moderate, High) and are assessed using a combination of subjective professional judgement and computer simulation tools. The Morice Landscape Model[72] provided 250 year simulations of landscape conditions, which were used to assess the expected long term impacts of LRMP management direction on various environmental values.

A summary of the risk assessment, by environmental value for Base Case Management and the Final Land Use Recommendations, is presented in the following table.

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[72] Gowland Technologies et al., *Morice Landscape Model*, December 2, 2003.

Table 19 Environmental Risk Assessment Summary

Environmental Value	Base Case Management	LRMP Management
Ecosystem Representation	• < 0.1% of the Plan Area in Protected areas • 0.5% of the Plan Area in No Harvest areas *High Risk*	• 6.4 % of the Plan Area in Proposed Protected Areas • 20.4% of the Plan Area in Proposed No Harvest Areas *Moderate to High Risk*
Coarse Filter Biodiversity	• no new Protected Areas • less old forest on managed landscape • 7.25% retention of Wildlife Tree Patches in logged blocks	• New Proposed Protected Areas or No Harvest Areas over 27% of the Plan Area • High Biodiversity Areas over a further 6.2% of the Plan Area (8.9% of the forested area) • Wildlife Tree Patch Retention of an area equivalent to 7.25% of all logged blocks, plus temporary retention of additional unlogged forest on large cutblocks • Extended rotation on a portion of large cutblocks • Development and implementation of Best Management Practices for Coarse Woody debris • Retention of the deciduous component of managed forests • Development of Best Management Practices for management of tree species diversity • Use of natural regeneration on a portion of logged land
	Overall Risk: High in areas developed for forestry	Overall risk: Moderate-High in areas developed for forestry
Grizzly Bear	No specific management of habitat availability or access-related mortality Overall decline in suitability and value of seasonal habitats as a result of timber harvest	• Checking for spring and salmon foraging sites during lower level planning • Limitations to timber harvest near identified spring and salmon foraging sites • Development and implementation of strategies for managing access related mortality • Inclusion of some important grizzly bear habitat within Proposed Protected Areas or No Harvest Areas • Overall decline in suitability and value of seasonal habitats as a result of timber harvest, but slightly less decline than under Base Case
	Overall risk: High in roaded portions of Plan Area, Low-Moderate in remote unroaded portions	Overall risk: High in roaded portions of Plan Area, Low-Moderate in remote unroaded portions; however, generally lower risk than under Base Case Management.
Northern Caribou	Limited timber harvest in Telkwa herd habitat	• Limited timber harvest in Telkwa and Takla herd habitats. • Checking for summer and calving habitats during lower level planning • Limited timber harvest near identified summer and calving habitats

Environmental Value	Base Case Management	LRMP Management
	Overall risk: Uncertain as it will likely depend on long term predation trends.	Overall risk: Uncertain as it will likely depend on long term predation trends.
Fisher	No specific provisions.	• Protection of den trees. • Inclusion of potentially important riparian habitats in Morice River No Harvest Areas. • Better management of deciduous forests important to this species.
	Overall Risk: Uncertain due to lack of information on local populations.	Overall Risk: Uncertain due to lack of information on local populations.
Northern Goshawk	Due to timber harvest, general reduction in habitat likely to be occupied.	• Due to timber harvest, general reduction in habitat likely to be occupied. • Protection of known nest/fledging sites. • Inclusion of habitat in Protected and No Harvest Areas.
	Overall Risk: Moderate-High	Overall Risk: Moderate-High
Mountain Goat	No specific provisions.	• Access controls near isolated populations. • Limited timber harvest in important shelter habitats. • Inclusion of habitat in Protected and No Harvest Areas. • Reduced risk of disease transfer from domestic animals.
	Overall risk: Low for most populations. Moderate-High for small isolated populations near Morice and Nadina Mountains.	Overall Risk: Low for most populations. Moderate for small isolated populations near Morice and Nadina Mountains.
Moose	No specific provisions.	Development and implementation of Best Management Practices for management of habitats providing thermal cover, screening, and forage production.
	Overall risk: Low	Overall risk: Low
Marten	No specific provisions.	No specific provisions. Inclusion of habitat in Protected and No Harvest Areas. Greater amounts of old forest, and specific management of coarse woody debris should reduce risk to Marten relative to the Base Case.
	Overall risk: Low - Moderate	Overall risk: Low – Moderate, but slightly lower than Base Case due to management of forest age, and inclusion of habitat in Protected and No Harvest Areas.

Environmental Value	Base Case Management	LRMP Management
Bull Trout	No specific provisions. Species benefits from general management of riparian areas.	• Management of special spawning areas, natal areas, and staging locations. • Species benefits from general management of riparian areas, aquatic ecosystems, and fish habitat. • Management of access to sensitive staging and spawning areas.
	Overall risk: Uncertain	Overall risk: Uncertain, but lower than under Base Case management.
Riparian Ecosystems	Assumed equivalent to Forest Practices Code	• Assumed equivalent to Forest Practices Code • Development of Best Management Practices for management of riparian areas. • Maintenance of function integrity of lakeshores and colluvial and alluvial fans.
	Overall risk: Uncertain	Overall risk: Low - Moderate
Rare Ecosystems	No specific provisions.	• Direction to reduce risk to Red and Blue Listed ecosystems. • Protection of large area of Red Listed Cottonwood-Red Osier ecosystem along Morice River.
	Overall risk: High	Overall risk: Moderate
Aquatic Ecosystems and Fish Habitat	Assumed to meet or exceed protection accomplished by the Forest Practices Code	• Assumed to meet or exceed protection accomplished by the Forest Practices Code • Inclusion of portions of Morice, Nanika, and Nadina Rivers within No Harvest Areas • Direction regarding: o water quality and temperature, o retention of functional integrity of streams, alluvial and colluvial fans, floodplains, riparian ecosystems, and lakeshore management areas, o rehabilitation of damaged fish habitat, o restoration of fish access impeded by land use, o maintenance of populations of lake resident fish that are sensitive to overfishing, o minimizing negative effects of water withdrawals.
	Overall risk: Uncertain	Overall risk: Low-Moderate

7.2 Integrated Perspective on Socio-Economic and Environmental Impacts

The complete range of expected socio-economic and environmental impacts of the Morice LRMP are presented in this subsection, using both a graphical representation of subjective assessment results, and a more quantitative indication of the expected impacts.

A comprehensive summary of the impacts of the Morice LRMP on industry sectors, stakeholder groups and environmental values is provided in the chart on the following pages. This chart was developed by the socio-economic and environmental assessment teams, to provide a common presentation tool that displays both types of expected impacts.

Each team assigned subjective cost and benefit indicators to the various sectors, interests and values, based on impressions formed over the course of undertaking the separate socio-economic and environmental impact assessments. Expected impacts are indicated on the chart as Significant Costs (C), Modest Costs (c), Significant Benefits (B), Modest Benefits (b), or a mix of costs and benefits, with neither being particularly dominant (b/c). Where cells in the grid are left blank, no impacts are expected.

The rows on the chart correspond to management initiative headings in the Morice LRMP Final Land Use Recommendation document. The columns in the chart are independent from one another in the sense that a significant benefit (B) to say the recreation sector is not necessarily of the same magnitude or social significance as a significant benefit (B) to the Botanical Forest Products sector. The chart does not attempt to weigh the relative value or significance of the different sectors, interests or environmental values (columns).

Following the subjective analysis chart is a second chart giving a more quantitative perspective on base case economic parameters and the expected socio-economic and environmental impacts of the LRMP.

Table 20 Morice LRMP Subjective Socio-Economic and Environmental Assessment

General Management Direction	Management Direction											Ecosystem Representation											Focal Widlife Species										
		Forestry	Mining	Agriculture	Energy	Guiding/Trapping	Botanicals	Tourism	Recreation	Communities	First Nations	Babine Upland**	Bulkley Basin**	Bulkley Ranges**	Nechako Upland	Kimsquit Mountains	AT	CWH	ESSF	MH	SBS**	Coarse Filter Biodiversity	Grizzly Bear***	Caribou***	Fisher****	Northern Goshawk	Mountain Goat	Moose	American Marten	Bull Trout***	Riparian Ecosystems	Rare Ecosystems	Aquatic Ecosystems and Fish
General (2.1)	Noxious weeds, fertilizer use, point source pollution	b/c*		b/c			b	b/c	b/c																								
Consultation (2.2)		b/c*	b/c	b	b/c	b	b	b	b	b	b/c																						
Community (2.3)																																	
Air Quality		c*	c					b	b	b																							
Community Resiliency										b																							
Cultural Heritage	Consultation and nondisturbance	c*	c					b	b		B																						
Hunting and Fishing	Access and activity restrictions					b			b/c		b/c																						
Recreation	Maintain facilities,features and trails functionality	c	c			b		b	B		b											b											
Settlement	Avoid sprawl but permit isolated single parcel dev'mt							b	b	b																							
Visual Resource	Establish Scenic Areas, VLIs and VQOs	■	c			b	b	b	b	b	b											b	b										
Economy (2.4)																																	
Access	Access management and consultation	c*	c	b		b		b/c	b/c		b												b	b			b			b			
Agric. and Range	Expansion of agric. land and range use	c		B				b		b/c													c		c			c					
Botanicals	Avoid damage to existing and protect potential	■					B	b		b/c	B																						
Guide Outfitting	Sustain wildlife and maintain access					b		b/c	b	b																							
Minerals and Energy	Maintain access, respect other values		b																														
Timber	Maintain THLB,AAC,MAI, reduce nonrecoverable	b*																															
Tourism	Maintain facilities,features and trails functionality	c	c			b		B	b		b											b											
Trapping	Maintain area,lines and access. Consultation	c*				b																											
Ecosystem (2.5)																																	
Biodiversity	RNV, old growth, patch size, WTP*, ecosystem mgmt	■				b	b	b	b		b								b		b	B	b		b				b	b	B	B	
Fish and Aquatic	Stream structure, temperature, flow, riparian, access	■	c	c	c	b/c		b/c	b/c		b																			B	B		B
Protected Areas	Maintain hunting, trapping and tourism opportunities					b																											
Water Resources	Watershed integrity, quality, flow rates, no export	c*	c	b	c			b	b	b	b																						B
Wildlife and Habitat	Specific habitat preservation, access restriction	■	c	c		b		b/c	b/c		b												b	b	b	b	b	b					

Legend: c = modest costs, C = significant costs, b = modest benefits, B = significant benefits, b/c = a mix of costs and benefits

* *not modelled in MLM timber harvesting simulation;* ***Ecosection or Biogeoclimatic Zone has less than 10% in base case PAs or No Timber Harvest zones* **** Blue listed species* ***** Red listed species.*

Table 20 Morice LRMP Subjective Socio-Economic and Environmental Assessment

General Management Direction	Management Direction	Forestry	Mining	Agriculture	Energy	Guiding/Trapping	Botanicals	Tourism	Recreation	Communities	First Nations
General (2.1)	Noxious weeds, fertilizer use, point source pollution	b/c*		b/c			b	b/c	b/c		
Consultation (2.2)		b/c*	b/c	b	b/c	b	b	b	b	b	b/c
Community (2.3)											
Air Quality		c*	c					b	b	b	
Community Resiliency										b	
Cultural Heritage	Consultation and [illegible]	c*	c					b	b		B
Hunting and Fishing	Access and activity restrictions					b			b/c		b/c
Recreation	Maintain facilities features and trails functionality	c	c			b		b	B		b
Settlement	Avoid sprawl but permit isolated single parcel dev mt							b	b	b	
Visual Resource	Establish Scenic Areas, VLIs and VQOs	C	c			b	b	b	b	b	b
Economy (2.4)											
Access	Access management and consultation	c*	c	b		b		b/c	b/c		b
Agric. and Range	Expansion of agric. land, and range use	c		B				b		b/c	
Botanicals	Avoid damage to existing and protect potential	C*					B	b		b/c	B
Guide Outfitting	Sustain wildlife and maintain access					b		b/c	b	b	
Minerals and Energy	Maintain access, respect other values		b								
Timber	Maintain THLB AAC MAI, reduce nonrecoverable	b*									
Tourism	Maintain facilities features and trails functionality	c	c			b		B	b		b
Trapping	Maintain area lines and access. Consultation	c*				b					
Ecosystem (2.5)											
Biodiversity	RNV, old growth, patch size, WTP*, ecosystem mgmt	C				b	b	b	b		b
Fish and Aquatic	Stream structure, temperature, flow, riparian, access	C*	c	c	c	b/c		b/c	b/c		b
Protected Areas	Maintain hunting, trapping and tourism opportunities					b					
Water Resources	Watershed integrity, quality, flow rates, no export	c*	c	b	c			b	b	b	b
Wildlife and Habitat	Specific habitat preservation, access restriction	C*	c	c		b		b/c	b/c		b

General Management Direction	Ecosystem Representation										Coarse Filter Biodiversity	Focal Wildlife Species								Riparian Ecosystems	Rare Ecosystems	Aquatic Ecosystems and Fish
	Babine Upland**	Bulkley Basin**	Bulkley Ranges**	Nechako Upland	Kimsquit Mountains	AT	CWH	ESSF	MH	SBS**		Grizzly Bear***	Caribou***	Fisher****	Northern Goshawk	Mountain Goat	Moose	American Marten	Bull Trout***			
General (2.1)																						
Consultation (2.2)																						
Community (2.3)																						
Air Quality																						
Community Resiliency																						
Cultural Heritage																						
Hunting and Fishing																						
Recreation											b											
Settlement																						
Visual Resource											b	b										
Economy (2.4)																						
Access												b	b			b			b			
Agric. and Range												c		c			c					
Botanicals																						
Guide Outfitting																						
Minerals and Energy																						
Timber																						
Tourism											b											
Trapping																						
Ecosystem (2.5)																						
Biodiversity								b		b	B	b		b				b	b	B	B	
Fish and Aquatic																			B	B		B
Protected Areas																						
Water Resources																						B
Wildlife and Habitat												b	b	b	b	b	b					

Legend: c = modest costs, C = significant costs, b = modest benefits, B = significant benefits, b/c = a mix of costs and benefits
* not modelled in MLM timber harvesting simulation. **Ecosection or Biogeoclimatic Zone has less than 10% in base case PAs or No Timber Harvest zones. *** Blue-listed species. **** Red-listed species.

Table Continued

Area Specific Management	Management Direction											Ecosystem Representation											Focal Wildlife Species									
		Forestry	Mining	Agriculture	Energy	Guiding/Trapping	Botanicals	Tourism	Recreation	Communities	First Nations	Babine Upland**	Bulkley Basin**	Bulkley Ranges**	Nechako Upland	Kimsquit Mountains	AT	CWH	ESSF	MH	SBS**	Coarse Filter Biodiversity	Grizzly Bear***	Caribou***	Fisher****	Northern Goshawk	Mountain Goat	Moose	American Marten	Bull Trout***	Riparian Ecosystems	Rare Ecosystems	Aquatic Ecosystems and Fish
Bulkley River	Water resource management, riparian areas	c		c			b				B																			b	b		b
Friday/Nakinilerak	Retain 30% mature and old, natural regeneration*, no range leases (Nakinilerak), fly in only to Friday Lake	c				b	b		b		b										b	b	b								b		
Gosnell/Thautil	High biodiversity emphasis, minimize road density*	C	c			b	b		b		b								b		b	b	b	b				b		b			b
Grease Trail	No harvest/HBEA buffers, non-motorized summer rec	c				b	b	b	b		B										b	b											
Herd Dome	No timber harvest, summer non-motorized	c	c			b	b	b	B		b			B			b		b			b	b	b			b						
Matzehtzel/Nez	access to avoid wetlands, summer motorized hard surf	c*				b	b	b	b																								
Morice Lake	No harvest, no new roads, no settlement	c	c			b	b	b	B		b			B		B	b	B	B	b		B	b	b		b	b		B				b
Morice Mountain	Motorized recreation mgmt, allow natural succession	c*					b	b	b														b				b						
Morice River	No floodplain harvest. Limited harvest within buffer	c		c			b	b	B		b		b	b							B	b	b		b			b		b		B	b
Upper Morice River	No floodplain harvest, no harvest within buffer	C		c			b	b	b		B			b							b	b	b					b		b			
Morrison Lake/Babine E	30m Reserve zone, 130m Riparian mgmt., 1500 HBEA	c	c			b	b	b	b		b										b	b	b					b			b		b
Nanika River	No floodplain harvest, high BDEA buffer, no water diver	c			c		b	b	b		B											b	b							b			B
Nadina/ Owen	Very limited timber harvest	C	c			b	b	b	b		B										b	b	b			b		b	b				
Nadina River	No floodplain harvest. Limited harvest within buffer	c		c		b	b				B		b	b	b						b	b	b					B		b	b		b
Swan Lake/ China Nose	No timber harvest, motorized hard surface only	c		b/c		b	b	b	b		B		b						b		b	b	b									b	
Starr Creek	No timber harvest, manage for motorized/non-motorized	c	c			b	b	b/c	b/c		b			b			b		b			b	b				b						
Tahtsa/Troitsa	No timber harvest, manage for motorized/non-motorized	c	c			b	b	b	b		b			B		B	b	B	B	b		B	b	b			b		B				
Twinkle - Horseshoe	Non-motorized recreational use							b/c	b/c																								b
Protected Areas																																	
Atna Bay Ecological	Ecological reserve, no hunting, fishing, botanical harvest					c	c	c	c		b					b		b				b											
Babine Lake Parks	9 very small areas along the shore of Babine Lake		c					b	b			b									b	b											
Burnie-Shea Lakes	Protected, non-motorized	c	c			b	b	b/c	b/c		b			B			B		B		b	B	b	b		b	b		B				b
Nadina Mountain	Protected	c	c			b	b	b/c	b/c		B				b		b		b			b	b				b					b	
Nanika -Kidprice	Protected. Motorized use restrictions	C	c			b	b	b	b		B			B		B	B	b	B	b	b	B	b			b	b		B	b	b		b
Old Man Lake	Protected, allow guiding, trapping, gathering	c	c				b		b		b		b								b	b										B	b

Legend: c = modest costs. C = significant costs. b = modest benefits. B = significant benefits. b/c = a mix of costs and benefits
* not modelled in MLM timber harvesting simulation. **Ecosection or Biogeoclimatic Zone has less than 10% in base case PAs or No Timber Harvest zones. *** Blue listed species. **** Red listed species

Table Continued

												Ecosystem Representation											Focal Widlife Species										
Area Specific Management	**Management Direction**	Forestry	Mining	Agriculture	Energy	Guiding/Trapping	Botanicals	Tourism	Recreation	Communities	First Nations	Babine Upland**	Bulkley Basin**	Bulkley Ranges**	Nechako Upland	Kimsquit Mountains	AT	CWH	ESSF	MH	SBS**	Coarse Filter Biodiversity	Grizzly Bear***	Caribou***	Fisher****	Northern Goshawk	Mountain Goat	Moose	American Marten	Bull Trout***	Riparian Ecosystems	Rare Ecosystems	Aquatic Ecosystems and Fish
Bulkley River	Water resource management, riparian areas	c		c			b				B																			b	b		b
Friday/Nakinilerak	Retain 30% mature and old, natural regeneration*, no range leases (Nakinilerak), fly in only to Friday Lake	c				b	b		b		b										b	b	b								b		
Gosnell/Thautil	High biodiversity emphasis, minimize road density*	■	c			b	b		b		b								b		b	b	b	b				b		b			b
Grease Trail	No harvest/HBEA buffers, non-motorized summer rec	c				b	b	b	b		B										b	b											
Herd Dome	No timber harvest, summer non-motorized	c	c			b	b	b	B		b			B			b		b			b	b	b			b						
Matzehtzel/Nez	access to avoid wetlands, summer motorized hard surf	c*				b	b	b	b																								
Morice Lake	No harvest, no new roads, no settlement	c	c			b	b	b	B		b			B		B	b	B	B	b		B	b	b		b	b		B				b
Morice Mountain	Motorized recreation mgmt, allow natural succession	c*					b	b	b														b				b						
Morice River	No floodplain harvest, Limited harvest within buffer	c		c			b	b	B		b		b	b							B	b	b		b			b		b		B	b
Upper Morice River	No floodplain harvest, no harvest within buffer	■		c			b	b	b		B			b							b	b	b					b		b			
Morrison Lake/Babine E	30m Reserve zone, 130m Riparian mgmt., 1500 HBEA	c	c			b	b	b	b		b										b	b	b					b			b		b
Nanika River	No floodplain harvest, high BDEA buffer, no water diver.	c			c		b	b	b		B											b	b							b			B
Nadina/ Owen	Very limited timber harvest	■	c			b	b	b	b		B										b	b	b			b		b	b				
Nadina River	No floodplain harvest, Limited harvest within buffer	c		c		b	b				B		b	b	b						b	b	b					B		b	b		b
Swan Lake/ China Nose	No timber harvest, motorized hard surface only	c		b/c		b	b	b	b		B		b						b		b	b	b									b	
Starr Creek	No timber harvest, manage for motorized/non-motorized	c	c			b	b	b/c	b/c		b			b			b		b			b	b				b						
Tahtsa/Troitsa	No timber harvest, manage for motorized/non-motorized	c	c			b	b	b	b		b			B		B	b	B	B	b		B	b	b			b		B				
Twinkle - Horseshoe	Non-motorized recreational use							b/c	b/c																								b
Protected Areas																																	
Atna Bay Ecological	Ecological reserve, no hunting, fishing, botanical harvest					c	c	c	c		b					b		b				b											
Babine Lake Parks	9 very small areas along the shore of Babine Lake		c					b	b			b									b	b											
Burnie-Shea Lakes	Protected, non-motorized	c	c			b	b	b/c	b/c		b			B			B		B		b	B	b	b		b	b		B				b
Nadina Mountain	Protected	c	c			b	b	b/c	b/c		B				b		b		b			b	b				b					b	
Nanika -Kidprice	Protected, Motorized use restrictions	■	c			b	b	b	b		B			B		B	B	b	B	b	b	B	b			b	b		B	b	b		b
Old Man Lake	Protected, allow guiding, trapping, gathering	c	c				b		b		b		b								b	b										B	b

Legend c = modest costs, C = significant costs, b = modest benefits, B = significant benefits, b/c = a mix of costs and benefits
* not modelled in MLM timber harvesting simulation, **Ecosection or Biogeoclimatic Zone has less than 10% in base case PAs or No Timber Harvest zones. *** Blue listed species. **** Red listed species.

Table 21 Summary of Morice LRMP Base Case and SEEA

Economic Impacts	Base Case					Morice LRMP Impacts
	Direct PYs of Employment		Direct GDP ($ Million)	B.C. Direct Government Revenues ($ Million)	B.C. Net Economic Value ($ Million)	
	Morice LRMP Area	B.C.				
Sectoral Data:						
Forestry (AAC excl. Woodlots)	1,018	1,442	$198.08	$89.05	$66.51	• Certainty benefits • Net economic value loss equivalent to $4.2 million per year excluding $1 million in potential additional harvesting costs • No jobs lost in decade 1; over 6 decades, average loss of 108 direct FTEs in forest sector
Huckleberry Mine	82	215	$38.95	$1.90	$1.65	No impact
Agriculture	20	20	$0.89	$0.05	$0.06	B
Backcountry Tourism:						
Guide Outfitting	21	21	$0.64	$0.08	$0.16	B
Guided Angling	13	13	$0.94	$0.09	$0.19	B
Other Commercial Tourism	9	9	$0.38	$0.05	$0.05	B
	43	43	$1.96	$0.21	$0.41	
Other Industrial Sectors:						
Mineral Exploration	• ARIS 1970-2002 expenditures: $2 million/yr ($2002); 4.3% of B.C. exploration expenditures					• Certainty benefits • Alienating 5.2% of high metallic potential may translate to loss of $0.1 million in annual net economic value and an average of 10 direct FTEs per year
Oil & Gas	• No existing activity - some potential					No impact
Hydro-electric	• Nechako reservoir system; potential run of river projects					C
Botanical Forest Products	• Limited existing activity - some potential					B
Trapping	• 62 territories; total average annual revenues of $90,000 for Morice LRMP area					B
Recreation Values	• Various estimates - some $50 range; others $10 to $20 range - estimated 100,000 recreation days				$1 million to $5 million	B

Social and Environmental Impacts	Morice LRMP Impacts	
Community Sustainability/Resilience	• Impacts of employment declines (beginning in decade 2) from decreased forest industry activity • Benefits to ecological integrity, civic vitality, economic diversity and recreation opportunities	B/C
First Nations	• Benefits to cultural heritage, botanical forest products, culturally significant ecosystems	B
Environmental Values	• Increased ecosystem representation in Protected Areas and No Timber Harvest areas • Reduced risk to coarse filter biodiversity in area developed for forestry • Reduced risk to some mountain goat populations, riparian ecosystems, rare ecosystems and aquatic ecosystems • Less significant benefits to grizzly bear, marten, moose, and bull trout	B

8 Conclusions

The Morice LRMP Land Use Recommendation provides a long term vision for the strategic direction of land and resource management on 1.5 million hectares of Crown land in northwest B.C. This consensus recommendation provides the framework for a locally developed social contract for users and/or developers of the lands and resources in the Morice plan area (The Office of the Wet'suwet'en abstained from ratification pending government to government discussion of issues that could not be dealt with by the planning process).

8.1 Net Economic Value

From a Net Economic Value perspective, the costs related to changes in forest industry activity (equivalent to $4.2 million per annum on a net present value basis excluding a potential $1 million in additional harvesting costs) and mining industry activities ($0.1 million per annum) are balanced against benefits associated with maintaining or expanding recreation value, backcountry tourism, botanical forest products, agriculture and trapping. The sectors and activities that are expected to experience net economic benefits (with the exception of recreation) are currently very small in terms of their contribution to the flow of net economic value from the Morice LRMP area. Benefits to these sectors are likely to occur over a long time horizon, and are unlikely to offset the costs incurred from changes in forest industry activity, which are expected to begin one decade from now.

The Net Economic Value accounting is incomplete, however, as it does not include externalities arising from forestry and mining sector activities. Concerns expressed by planning table representatives, as well as the base case environmental risk assessment for the Morice LRMP, indicate that there are negative externalities associated with the base case rates and methods of timber harvesting, and potential mining activities. The extent to which these negative externalities will be reduced by Morice LRMP management direction should be set against the raw Net Economic Value cost implications presented in Table 21. While we have been unable to quantify either the base case level of these externalities, or the extent of their potential amelioration through LRMP initiatives, there is some expression of this amelioration in Table 20 in the benefits noted to other sectors and interests, as well as environmental values.

8.2 Economic Development

The Morice LRMP may result in a loss of direct forest industry employment and to a lesser extent, potential mining industry employment over the long term, relative to the base case projections. These losses may be offset to some degree, over time, by employment gains in other sectors. As with the net economic value accounting, however, the sectors which should see some LRMP related gain in employment are currently small in terms of the overall employment levels that rely on Morice LRMP area resources. It is unlikely that the gains from these sectors will completely offset the losses in the forestry and mining sectors.

Some of the potential job losses, and offsetting job gains, will likely occur in the Morice LRMP communities. The large and efficient lumber manufacturing operations in Houston may be able to mitigate declines in timber supply from the Morice LRMP area by attracting a larger proportion of their timber requirements from outside the plan area. Nevertheless, the loss of jobs associated with the harvesting side of the forest sector will likely lead to an overall net loss of employment in

Houston and Granisle. Expected modest employment gains in other sectors will assist these communities in their goal to add greater diversity to their economic base.

The Morice LRMP generally facilitates First Nations economic development strategies in the forest sector, eco-cultural tourism, botanical forest products and backcountry adventure tourism.

8.3 Social Impacts

Community capacity building, local empowerment, resource inventory information and stakeholder consensus are key benefits of the planning process to plan area communities. The impacts on community resilience are mixed, with benefits such as greater ecological integrity, greater economic diversity, greater local governance and maintenance of recreation values, counterbalancing the socio-economic costs associated with the jobs at risk.

First Nations should benefit through the protection of cultural heritage resources, as well as any incremental benefits to fish and wildlife populations, and culturally significant ecosystems.

8.4 Environmental Impacts

The Morice LRMP Land Use Recommendation is expected to provide a generally reduced level of risk of serious adverse impacts to many environmental values, compared to base case management.

Regional ecosystem representation in Protected Areas and No Timber Harvest areas will be enhanced for some ecosections and biogeoclimatic zones, although some of those which are less represented in the base case (Babine Upland, Bulkley Basin and Sub Boreal Spruce) will not receive significant additional representation under the Morice LRMP.

The risk of serious adverse impacts from industrial and recreation activities is expected to be reduced by at least one rating category for several environmental values including coarse filter biodiversity, some mountain goat populations, riparian ecosystems, rare ecosystems and aquatic ecosystems. Expected benefits to moose (low risk), grizzly bear (high risk in roaded areas), caribou (risk uncertain), marten (low to moderate risk), fisher (risk uncertain), goshawk (moderate to high risk) and bull trout (risk uncertain) are not expected to be sufficient to result in a change in risk profile for these focal species in the Morice LRMP area.

APPENDIX 1 DEMOGRAPHIC AND COMMUNITY DATA

Population

The *Morice LRMP Base Case Socio-Economic Assessment* provides community profiles of the key communities in the area, namely the District Municipality of Houston, the Village of Granisle and the rural populations in Sub-Division G. The following table shows that the Morice LRMP area has a population of approximately 5,200 people. Another 8,700 people reside in Smithers, Telkwa and Burns Lake, three communities that are within a one hour drive of Houston, bringing the total population in and near the LRMP area to approximately 14,000 people.

The table also shows that another 27,000 people reside elsewhere in the Bulkley Nechako Regional District, bringing the total Bulkley Nechako population to almost 41,000 people (including 6,000 people of First Nations ancestry).

Table 22 Population in and Near the Morice LRMP Area

	1981	1991	2001	% Change 1981-2001
Morice Plan Area				
Houston	3,921	3,628	3,580	-9%
Granisle	1,430	803	350	-76%
Sub-Division G (1)	896	970	1,099	23%
Other	167	251	163	-2%
Total Morice Plan Area	6,414	5,652	5,192	-19%
Other Major Communities Near Morice LRMP Area (2)				
Smithers	4,697	5,029	5,414	15%
Telkwa	861	961	1,371	59%
Burns Lake	1,826	1,686	1,942	6%
Sub-total	7,384	7,676	8,727	18%
Other Bulkley Nechako (3)	24,511	25,015	26,937	10%
Total Bulkley Nechako Regional District	38,309	38,343	40,856	7%
Morice Forest District Population (4)	6,790	6,100	5,243	-23%

Notes:

1. Sub-Division G includes most rural settlements in the Morice LRMP area including Topley and Topley Landing.
2. Other communities in the Bulkley Nechako regional district include Fraser Lake, Fort St. James, Vanderhoof and various First Nations communities. The rural populations surrounding these communities are also included.
3. The 1981 data for Smithers, Telkwa and Burns Lake include an estimate of the net Census undercount and non-permanent residents.
4. Represents the B.C. Ministry of Forests Census population estimates for the Morice Forest District; the data are consistent with the Census estimates provided in the Morice LRMP Base Case SEA.

Source:

- Data for Morice Plan Area and Bulkley Nechako Regional District: Pacific Analytics Inc. et al., *Morice LRMP Base Case Socio-Economic Assessment*, page 12.
- Smithers, Telkwa and Burns Lake: 1981 data: B.C. Stats, *British Columbia Municipal Intercensal Population Estimates, 1976 to 1986*; 1991 data: BC Stats, *1996 Census Profile of British Columbia Census Subdivisions*; 2001 data: 2001 Statistics Canada Community Profiles. As different sources are used for each year, the data for these communities may not be entirely consistent.

The table shows the decline in the Granisle population between 1981 and 2001. The population decline results from the closures of the Bell Copper mine (1992) and the Granisle Mine (1982).[73]

Labour Force and Income Dependencies

The Morice LRMP Base Case Socio-Economic Assessment provides a detailed review of labour force statistics and income dependencies for the Smithers-Houston region.

The Base Case Socio-Economic Assessment explains variations in income dependencies between 1991 and 1996. The table shows that the percent income dependency for mining dropped from 9% in 1991 to 3% in 1996, following the closures of the Bell Copper mine (1992) and the Equity Silver Mine (1994). In 2001, mining increased from 3% in 1996 to 5% following the opening of the Huckleberry mine in 1997.

As shown on the following table, some of the changes that occurred between 1996 and 2001 include a drop in the tourism sector, an increase in the public sector and a drop in "other basic sectors". The increase in the public sector in 2001 has likely been reversed somewhat in 2003/2004, with the rationalization of regional delivery of provincial government services.

Table 23 Income Dependencies in Smithers-Houston

Year	Smithers-Houston Area			Smithers/Telkwa Only		Houston Only		Morice LRMP
	1991	1996	2001	1996	2001	1996	2001	2001
Forestry	26	36	34	21	24	63	57	56
Mining	9	3	5	2	3	1	7	7
Fish & Trapping	0	0	0	1	0	0	0	0
Agriculture & Food	3	3	3	2	3	2	2	2
Tourism	5	7	5	9	6	3	2	2
High Tech	0	0	1	0	2	0	0	0
Public Sector	19	22	26	23	33	11	13	12
Other Basic	14	11	7	22	9	5	3	3
Transfer Payments	13	12	12	14	12	12	10	11
Non-Employment	11	6	7	8	7	4	6	7
Total	100	100	100	100	100	100	100	100
Indices								
Diversity		64	63	74	66	40	46	47
Forest Vulnerability		54	53	21	35	156	132	127

Notes: Does not add due to rounding.

1. Represents the percentage of basic income in each major economic sector; basic income for each sector is defined as the direct, indirect and induced after tax income that depends on an independent basic sector such as forestry, mining and tourism. Agriculture and food includes farms (including hatcheries and aquaculture), animal food manufacturing, support activities for farms, meat product manufacturing and other food and tobacco manufacturing.
2. Other basic income includes the high technology sector, construction, and other basic sector.
3. Other income includes transfer payments and non-employment income.
4. The diversity index is lowest where one industry dominates; forest vulnerability is greatest for communities where dependence on the forest sector is highest and diversity is low.

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[73] Source: Pacific Analytics Inc. et al., *Morice LRMP Base Case Socio-Economic Assessment*, 2004, page 44.

Source: Horne, Gary, *British Columbia's Heartland at the Dawn of the 21st Century, 2001 Economic Dependencies and Impact Ratios for 63 Local Areas*, BC Stats, 2004.

Community Sustainability

The Morice & Lakes IFPA has developed a list of indicators and prepared an assessment of community sustainability for the Morice and Lakes IFPA region.[74] The IFPA community sustainability assessment details various aspects of the Morice and Lake communities including:

- Human capital profiles (includes education, trades training, perceived choices for employment, and education opportunities);
- Economic capital profiles (includes income, labour force recruitment and retention, access to government services, transportation services, etc.);
- Social capital profiles (includes number of community volunteer organizations, in/out migration, etc.);
- Ecological integrity profiles (including area of protected areas, air quality, visible stewardship, species of concern);
- Economic vitality profiles (including economic diversity, income leakage, incidence of low income, unemployment, entrepreneurship, etc.);
- Civic vitality profiles (including satisfaction with local governance, volunteerism, etc.);
- Physical and mental health profiles (including health care, substance abuse, etc.); and
- Recreational opportunities profiles (including the quality of outdoor and indoor recreational opportunities.

The IFPA community assessment compares the communities of Houston and Granisle, as well as the Morice LRMP area, with the Lakes communities and with B.C. Data on the Morice LRMP communities and area shows the following:

- Low level of schooling and human capital when compared to the rest of B.C.

- High levels of median income particularly in Houston where median household income is $57,810 in 2001, or 24% higher than the B.C. median income; the data also show however the drop in median income for Granisle from some $42,000 in 1991 to $23,310 in 2001.

- High levels of trust throughout the region and a strong commitment by residents to stay in the community.

- Little or no economic diversity and an unemployment rate of 13.8% in the Morice district, much higher than the 8.5% average for B.C. (2002). While significantly higher than in B.C., the unemployment rate in Houston declined from 14.2% in 1996 to 11.7% in 2001. That decline in the unemployment rate, however was partially offset by the rising unemployment situation in Granisle and other regions.

- Strong social support, a sense of community and a high degree of volunteerism.

- Mixed results on health care with residents providing very positive assessments of their own health, but with some communities facing relatively low levels of infrastructure.

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[74] Source: Natural Resources Canada, Canadian Forest Service (Norah MacKendrick and John R. Parkins), *Indicators of Community Sustainability for the Morice and Lakes IFPA Region*, 2004, 122 pages.

- Very high quality outdoor recreational opportunities, but few indoor opportunities.

The community sustainability assessment includes a few indicators of ecological integrity such as protected areas and the number of red and blue listed species in the area, but the report acknowledges the difficulty in providing an overall assessment of ecological integrity.

Community Economic Development Plan

The Morice LRMP table developed an Economic Development Action Plan (EDAP)[75] to help identify economic development opportunities and help the LRMP Table create conditions suitable for the development and promotion of these opportunities.

The EDAP emphasizes the importance of economic diversification in maintaining and enhancing the current way of life enjoyed by Morice LRMP area residents. The EDAP also suggests various economic development opportunities in a variety of sectors including forestry, mining, oil and gas, tourism and agriculture:

Strategy by Sector:	Opportunities for Further Technical Analysis
Forest Strategy: strengthen existing forest companies and promote new products and markets	• Cogeneration facility • Engineered wood products • Medium density fibre board
Mining, Oil and Gas and Energy: develop profitable world class mine sites that respect social and environmental needs	• Exploration and development in mining, oil and gas and energy
Tourism: maintain natural wilderness experience and promote the region as a wilderness attraction	• House boating • Snowmobile tours/destination snowmobiling • Commercial recreation site development • First Nations heritage site development • Guided tours of historic mines/prospecting tours
Non-timber forest products sector: collect information on uses, and undertake inventory	• Cultural and traditional use products • Pharmaceutical product development • Production of willow furniture
Agriculture: strengthening existing agriculture production while exploring alternative species and crop production	• Agriculture tours
Commercial fishery sector: protect spawning grounds and undertake salmon enhancement programs	• Possible salmon processing operation
Other	• Possible recreational lot development

Source: MSRM, Skeena Region et al., *Morice LRMP Economic Development Action Plan*, 2003.

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[75] B.C. Ministry of Sustainable Resource Management (Skeena Region) with assistance from Westcoast CED Consulting Ltd., *Morice Land & Resource Management Plan Economic Development Action Plan (EDAP)*, 2003, 177 pages.

APPENDIX 2 FOREST SECTOR

The forest industry in the Morice LRMP area accounts for 56% of all income in the Morice LRMP area (and 34% of all income in the Smithers/Houston area), and is by far the dominant employer in the region. The Morice LRMP Base Case SEA describes the socio-economic impacts associated with the forest industry in the Morice LRMP area. This appendix summarizes forest sector data on the key manufacturing facilities in Houston, on employment, on government revenues and on net economic value, as measures of base case forest sector activity impacts, as well as potential impacts from the LRMP.

The Canadian Forest Products (Canfor) facility in Houston is the largest softwood lumber mill in the world, having just completed a modernization and expansion program that brought annual production capacity to 600 million board feet of lumber.[76] The other major sawmill in Houston (Houston Forest Products) has an annual capacity of 293 million board feet of lumber and is also one of the largest 6 sawmills in B.C. (although approximately half the capacity of the upgraded Canadian Forest Products facility).

The AAC for the Morice LRMP area is 1,961,117 m3 excluding woodlots, which in 2003 provided an additional 47,009 m3.[77] Mills based in the Morice LRMP area process more than the wood harvested in the Morice LRMP planning area.

Local Timber Processing

Prior to the latest upgrading of the Canfor mill, the Morice LRMP facilities processed approximately 2.4 million m3 of timber. The latest expansion at Canfor will increase fibre requirements at that mill by approximately 600,000 m3 bringing the processing capacity of the two mills to about 3 million m3 of timber. While the Houston sawmills process more timber than is harvested in the Morice LRMP area, other mills near the Morice LRMP area depend on by-products from the Houston sawmills:

- Chips from the Houston sawmills are shipped to the Eurocan pulp mill (owned by West Fraser Mills Ltd.) in Kitimat (through chip trades with West Fraser, Canfor also sends its chips from the Houston sawmill to Eurocan);
- Chips from the Canfor chipper in Houston are sent to the Canfor pulp and paper mills in Prince George;
- Sawdust from the Houston sawmills is shipped to NewPro, a particleboard manufacturer based in Smithers;
- Trim ends and lumber from the Canfor sawmill in Houston are sold to Kyahwood finger jointing and value-added plant in Moricetown (Kyahwood is a joint venture between Canfor and the Wet'suwet'en First Nation).[78]
- K2 Manufacturing, a remanufacturing plant based in Houston also obtains its fibre supply from the Houston sawmills.

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[76] Canadian Forest Products Ltd., *Press Release*, February 9, 2004, Company web site.

[77] Source: Pacific Analytics Inc. et al., *Morice LRMP Base Case Socio-Economic Assessment*, 2004, page 29.

[78] Source: Personal communication with John Brockley, Houston Operations, Canadian Forest Products, March 2, 2004.

The following table lists the major wood products manufacturing facilities in Houston as well as in neighbouring communities.

Table 24 Wood Products Manufacturing in Houston and Neighbouring Communities

Mills in Morice LRMP Area	Mill Location	Annual Capacity (million board feet)	2002 Production (mfbm)	2002 Capacity Utilization	Mill Employees (FTEs)
PRIMARY PROCESSING					
Houston Forest Products	Houston	293	284	97%	253
Canadian Forest Products Ltd. (note 1)	Houston	600		n/a	327
VALUE ADDED MANUFACTURING					
Pleasant Valley Remanufacturing	Houston				55
Corwood	Houston				12
Other					48
Total		893			695

OTHER NEIGHBOURING SAWMILLS & REMAN PLANTS	Mill Location	Annual Capacity (million board feet)	2002 Production (mfbm)	2002 Capacity Utilization	Mill Employment (2002)
Babine Forest Products Co. (note 1)	Burns Lake	250	262	105%	238
Decker Lake Forest Products	Burns Lake	67	66	99%	
Apollo Forest Products Ltd.	Fort St. James	111			
Canadian Forest Products Ltd.	Fort St. James	274			
Stuart Lake Lumber Co. Limited	Fort St. James	77			
West Fraser (Fraser Lake Sawmills)	Fraser Lake	240	269	112%	251
Kyahwood Forest Products (note 2)	Smithers	28			105
West Fraser (Pacific Inland Resources)	Smithers	215	224	104%	229
West Fraser (Skeena Sawmills)	Terrace	156	83	53%	115
Total		1,418			

Notes: Only publicly available data are presented in this table.

1. Employment at the Canadian Forest Products mill in Houston has declined from 365 in 2002 to 327 employees, but this decline was more than compensated by an increase in value-added jobs at local remanufacturing plants. Source: Personal communication with John Brockley, Houston Operations, Canadian Forest Products, March 2, 2004.
2. Babine Forest Products is owned by West Fraser Mills (32%), Weldwood (58%), and Burns Lake Native Development Corporation (10%) (Source: Enhanced Forest Management Pilot Project web site, February 2004).
3. Kyahwood Forest Products is a value-added mill; the 105 employees excludes the 17 employees at Kyah Industries, a logging company owned by Kyahwood (Source: personal communication with John Brockley, Houston Operation, Canadian Forest Products, March 2, 2004).
4. Employment excludes woodlands employees (i.e. logging, silviculture and administration employees)

and all logging, silviculture and road construction contractors.

Source:
2002 Production & Employment: West Fraser Mills and Weldwood of Canada web sites (February 15th, 2004); 2002 Mill Capacity: B.C. Ministry of Forests, *Major Primary Processing Facilities in B.C.*, 2003.

Employment

Morice LRMP area timber generates an estimated 0.74 Person Years of employment per 1,000 m3 of timber harvested and processed. This estimate is based on the Ministry of Forests Timber Supply Review (TSR-2) conducted in 2002 for the Morice TSA. The Morice LRMP Base Case SEA suggests that TSR-2 may have understated the employment impacts of Morice LRMP area timber, but this is counterbalanced by the recent upgrade at the Canfor mill, leaving the 0.74 PYs per 1,000 m3 harvested as a likely fairly accurate reflection of current conditions.

- The Morice LRMP Base Case SEA provides more current and higher employment data for Canfor[79] than was used in TSR- 2, implying that the employment coefficient of 0.74 PYs of direct employment may understate the employment impacts.

- The TSR-2 document does not consider all of the value added employment generated in by Morice LRMP area timber, and provides limited detail on the pulp and paper coefficient used in the provincial employment estimates.

- The expansion of the Canfor mill in Houston has reduced the employment coefficient per m3 of wood processed at the mill from an estimated 0.205 PYs per 1,000 m3 (as per TSR-2) and 0.234 PYs per 1,000 m3 (2004 Base Case SEA estimate) to 0.164 PYs per 1,000 m3 (327 PYs for 2 million m3). While employment at primary facilities has dropped however, changes in trim block processing are providing some additional value added opportunities at K2 Manufacturing and at Kyahwood.[80]

The following table summarizes the employment coefficient data for the Morice LRMP area. The data differentiate between employment in the Morice LRMP area and provincial employment. The provincial employment coefficient assumes that 10% of the harvesting, silviculture and wood processing employees reside in Smithers and in other neighbouring communities outside the Morice LRMP area. The provincial processing employment coefficient includes approximately 0.16 PYs per 1,000 m3 to account for pulp and paper manufacturing, but excludes any finger-jointing or remanufacturing employment.

The application of coefficients to measure the impacts from a change in timber volumes suggests that employment losses would occur concurrently with a change in harvest level. While harvesting employment may be closely tied to the level of cut, processing and silviculture may not immediately feel the impact of a reduced harvest. Processing employment changes may be more closely related to thresholds where, at some quantity of timber supply, mills may reduce the number of shifts, or as a worst case, shut down completely. Moreover, changing productivity and growth in the forest sector as well as other unknown variables may affect the coefficients in the long term.

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[79] The *Morice LRMP Base Case SEA* suggests a processing coefficient of 0.234 FTEs per 1,000 m3 for Canfor (page 32), instead of the 0.205 FTEs per 1,000 m3 calculated by the Ministry of Forests in TSR-2, but the higher and more recent Canfor data were not used in the calculation of the overall industry coefficient of 0.74 PYs per 1,000 m3 presented in the *Morice LRMP Base Case SEA*.

[80] Source: *Morice LRMP Base Case SEA*, page 32; also, Logging and Sawmilling Journal (article by Jim Stirling), *Creating the World's Largest Sawmill*, July/August 2003; also, personal communication with John Brockley, Houston Operations, Canadian Forest Products, March 2, 2004.

Further, indirect and induced impacts will adjust over a longer period of time as spending levels adjust and businesses recognize and adjust for the loss of business. The time-frame over which the full impacts would occur is unknown.

Table 25 Employment Coefficients for Morice LRMP Area Timber

	Morice Area Employment from Morice TSA Timber		B.C. Employment from Morice TSA Timber		B.C. Empl. Income
	PYs per 000 m3	PYs	PYs per 000 m3	PYs	(1999 $millions)
Direct Employment:					
Harvesting	0.20	396	0.23	454	
Silviculture	0.09	178	0.10	197	
Processing	0.23	456	0.41	809	
Total Direct	0.52	1,030	0.74	1,460	$51.8
Indirect and Induced:					
Morice LRMP Area	0.16	317	0.16	317	$7.5
B.C. Other			0.72	1,423	$33.8
Total Indirect & Induced			0.88	1,740	$41.3
Total	0.68	1,347	1.62	3,200	$93.1

Note:

1. The person years (PYs) of employment attributed to the Morice TSA are based on 1,985,000 m3 harvested each year; the PYs do not exactly coincide with the Timber Supply Review analysis due to rounding.
2. The employment coefficient for indirect and induced jobs for the Morice TSA implies a multiplier of 1.31 direct, indirect and induced jobs per direct job, which is consistent with the 2001 migration employment impact ratios for the Morice LRMP of 1.20 for logging and silviculture and 1.40 for wood manufacturing. (Source: BC Stats, Morice LRMP 2001 data).

Source: B.C. Ministry of Forests Timber Supply Branch, *Timber Supply Review, Morice Timber Supply Area Analysis Report*, 2002; also reported in Pacific Analytic Inc. et al., *Morice LRMP Base Case Socio-Economic Assessment*, 2004, page 35.

The Morice TSA generates 0.74 Person Years of direct employment in Northern B.C. per 1,000 m3 of timber processed, or an estimated 1,442 Person Years (based on AAC excluding woodlots).

Provincial Government Revenues

The Morice LRMP Base Case SEA estimates government revenues for the forest sector based on the information provided in the 2002 Timber Supply Review, which in turns assumes stumpage revenues based on the average 1997 to 2000 rate of $44.40 per m3. Stumpage rates fell significantly in 2001 and 2002 (from $32.71 in 2000 to $21.44 per m3 in 2002), yielding an average stumpage rate over the last 6 years (1997 to 2002) of $32.61 per m3 (after accounting for inflation).

Table 26 Government Revenues from Morice LRMP Area Timber

Provincial Government Revenues	$ per m3 from TSR 2 & Base Case	Total $ Based on AAC	Adjusted Base Case per m3
Provincial income taxes paid by employees	$5.35	$10.49 Million	$5.35
Stumpage and Related Payments	$44.40	$87.08 Million	$32.61
Forest Industry Taxes	$7.45	$14.61 Million	$7.45
Total	$57.20	$112.18 Million	$45.41 per m3
Adjusted Base Case Data			$89.1 Million

Note: Forest industry taxes include logging taxes, corporate income, corporate capital, sales, property and electricity. Provincial income taxes include only the provincial share of income taxes paid.
Source: B.C. Ministry of Forests Timber Supply Branch, *Timber Supply Review, Morice Timber Supply Area Analysis Report*, 2002.

Table 27 Stumpage Rates for Morice Timber Supply Area, 1997 to 2002

	1997	1998	1999	2000	2001	2002	6 Year Average - 1997 to 2002
Average Rates:							
BC Timber Sales	$53.92	$43.46	$27.11	$35.89	$26.79	$21.66	
All Others	$40.45	$37.19	$30.12	$32.31	$22.01	$21.10	
Weighted Average	$41.18	$37.62	$29.94	$32.71	$22.38	$21.14	
Volume (000 m3)							000 m3
BC Timber Sales	114	150	146	252	185	174	170
All Others	1,978	2,037	2,257	2,017	2,212	2,054	2,093
Total Volume	2,092	2,187	2,403	2,269	2,397	2,228	2,263
Constant 2002 $							Constant $
BC Timber Sales	$59.63	$47.62	$29.20	$37.63	$27.39	$21.66	
All Others	$44.74	$40.75	$32.44	$33.88	$22.50	$21.10	
Weighted Average	$45.55	$41.22	$32.24	$34.29	$22.88	$21.14	$32.61
CPI (2002$)	90.4	91.3	92.9	95.4	97.8	100	
CPI (1992$)	107.6	108.6	110.5	113.5	116.4	119	

Note: The 2003 stumpage data for the Morice TSA are not readily available as the data for the Morice TSA and Lakes TSA are consolidated into the Nadina Forest District data beginning in 2003.
Source: B.C. Ministry of Forests, Revenue Branch, *Summary of Volumes and Average Stumpage Rates*, various years, www.for.gov.bc.ca (February 2004).

The following table shows the average annual net economic value from the forest sector in the Morice TSA. As shown on the table, the net economic value from the forest sector is estimated at $67 million per year or approximately $34 per m3 of timber harvested.

Table 28 Average Annual Net Economic Value from Morice LRMP Area Timber

Net Economic Value		Morice TSA, $ Million	Per m3
Public Sector Rent	$32.61per m3	$63.9	$32.61
Labour Rent	5 % of direct wages and salaries	$2.6	$1.30
Industry Rent	Minimal	Minimal	Minimal
TOTAL NET ECONOMIC VALUE		$66.5	$33.91

Source: Estimates prepared by *Pierce Lefebvre Consulting*.

This net economic value accounting is incomplete, as it does not include externalities arising from forest sector activities. Concerns expressed by planning table representatives, as well as the base case environmental risk assessment for the Morice LRMP, indicate that there are negative externalities associated with base case timber harvesting practices and rates of timber harvesting, that should be deducted from this estimate.

Timber Harvesting Constraints

The following two tables deal with timber harvesting constraints resulting from base case management direction and Morice LRMP management direction.

Table 29 summarizes various harvest constraining management initiatives, and how they are considered in the base case TSR2 analysis versus how they are considered in the Morice LRMP. The table demonstrates which LRMP management objectives are considered to be incremental to base case, and how these are treated in the LRMP impact simulation models.

Table 30 displays estimates of additional harvesting costs that may be incurred in respect of the incremental management initiatives. These estimates were prepared by the major licensees in the Morice TSA and are considered to be very approximate. The total of the estimated costs is $0.48 per m3, and the licensees indicated that a range of $0.30 per m3 to $1.00 per m3 would indicate the reliability of the estimate.

Table 29 Morice Area Timber Harvesting Constraints in Timber Supply Review & LRMP

Forest Management Initiative	TSR 2 Base Case	TSR 2 Sensitivity Run	Morice LRMP Scenario and MLM[81] Simulation
Proposed Protected Area Package (Burnie Lakes, Nanika-Kidprice, Telkwa Range, Atna Lake, Babine Lake sites, Nadina Mountain and Old Man Lake/China Nose, 13,217 ha of THLB)	10 year harvest deferral	1.9% reduction in THLB, 1% reduction in medium and long term timber supply if 50% of THLB impact implemented	Proposed protected areas and harvest exclusion areas were explicitly removed from THLB by SELES modeling (3.5% total reduction in THLB). Some areas proposed as possible PA's in TSR2, but not supported for protection in the LRMP were modeled under ASM rules or GMD as chosen by the LRMP
Wildlife Tree Patches (Stand Level Biodiversity)	3.6% Yield Curve Reduction applied to THLB	7.25% yield curve reduction results in medium and long term harvest reduction of 3.75%	SELES scenario modeling used 3.6% yield curve reduction as in TSR2. No additional simulation for larger cutblocks was deemed necessary (assuming the extra WTPs can eventually be harvested).
Landscape-Level Biodiversity	Old-seral guidelines from FPC, assumed 45% low, 45% intermediate and 10% high. Relaxed target for low to 1/3 target first rotation, 2/3 second rotation and full target on third rotation	Draft biodiversity emphasis options by draft landscape unit 9.5% high, 53.6% medium and 36.9% low. Apply full early, mature and old requirements to all LUs. Harvest reduced by 1.9% in decade 6, and 1.9% long term	SELES modeled GMD provisions regarding seral targets. Range of Natural Variation was applied in areas of High Biodiversity Emphasis, less stringent requirements (twice RNV) were applied elsewhere. High Biodiversity Emphasis Areas were unique polygons not delineated by LU boundaries. Seral targets were applied throughout the simulation, i.e. they were not adjusted lower during the early rotations.
Visual Quality Class 1 -preservation (total of all classes is 125,000 ha of THLB)	1% MAD, 5m green-up applied to CFA (max. allowable under guidelines)	Two runs, one at MAD (midpoints) of 0.5%, 3%, 10% and 20% reducing LTHL by 3.5%, and another at MAD (minimums) of 0% 1%, 5%, and 15%, reducing LTHL by 9.1%	SELES modeled impacts of Visual Quality Objectives within Visual Quality Areas which existed during TSR2 and within scenic areas newly proposed by the LRMP. VQO's for new scenic areas were extrapolated from old VQA's. Importance ratings for existing VQAs in the SELES simulation were those chosen by the LRMP; they were sometimes changed from ratings used in TSR2. SELES simulations used the same greenup standards for each Quality Class as were used in TSR2.
Visual Quality Class 2 –retention	5% MAD, 5m green-up applied to CFA (max allowable under guidelines)		
Visual Quality Class 3 - partial retention	15% MAD, 5m green-up applied to CFA (max allowable under guidelines)		
Visual Quality Class 4/5 -modification/max-modification	25% MAD, 5m green-up applied to CFA (max allowable under guidelines)		
Zone 'A' Morice River LRUP	1% MAD, 3m green-up applied to THLB		SELES simulated ASM rules (harvest exclusion), with boundary adjustments as selected by LRMP
Telkwa Caribou Herd Management Areas	25% MAD, 3m green-up applied to 25% of THLB in ESSF and SBS, min 25% >90 yrs old	MAD increased and decreased by 10%. No harvest level impacts.	SELES modeling used the Telkwa Caribou Herd Recovery Program boundary and rules as in the Base Case. In the Final Scenario, the rule min. 50% >90 yrs old was applied to the key forested habitats, but the greenup requirement was not applied. The latter rule would make no difference to timber because complete protection of the area made none.

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[81] Morice Landscape Model (also referred to as SELES model) developed specifically to facilitate analysis of timber harvesting and ecological impacts of the Morice LRMP.

Table 29 Morice Area Timber Harvesting Constraints in Timber Supply Review & LRMP

Forest Management Initiative	TSR 2 Base Case	TSR 2 Sensitivity Run	Morice LRMP Scenario and MLM[81] Simulation
Integrated Resource Management Zone	25% MAD, 3m green-up applied to THLB	MAD could be 23% without impact to timber supply. Reducing MAD to 20% would cause a large decrease (13.1%) to timber supply during the second decade of projection.	Nothing is specifically equivalent in Morice LRMP. SELES used the same constraints as TSR2.
Areas of Outstanding Recreation Value and Recreation Areas with High Environmental Sensitivity	Excluded from THLB (6503 ha)		SELES simulated ASM rules, with boundaries selected by LRMP
High Value Recreation Areas and Areas Requiring Special Management	No deductions, likely a small overestimation of timber supply	Exclusion results in 5.3% reduction in THLB (648,000 ha), 8.1% reduction in medium term harvest, and 3.75% reduction in long term harvest	SELES simulated ASM rules, with boundaries selected by LRMP
Owen Lake area (Wet'suwet'en)	No deductions		SELES simulated ASM rules, with boundaries selected by LRMP.
Riparian Reserve Zones	8,254 ha Excluded from THLB		SELES simulated removal from THLB. Same as TSR2
Riparian Management Zones (S1 and S2)	1,028 ha excluded from THLB		SELES simulated removal from THLB. Same as TSR2
General GMD: Invasive species control, point source pollution, fertilizer use	NA	NA	Not simulated, no likely impact on AAC, possible impact on operational costs
Consultation GMD	NA	NA	Not simulated, no impact on AAC from the GMD *per se*, although results of consultation could affect AAC, possible impact on operational costs
Air Quality GMD	NA	NA	Not simulated, no likely impact on AAC, possible impact on operational costs
Community Resiliency GMD	NA	NA	Not simulated, no likely impact on AAC, possible impact on operational costs
Cultural Heritage GMD	NA	NA	Not simulated. Impact on AAC would probably be small as most CHR are likely localized. However, the actual extent of CHR and means necessary to protect them are uncertain, so impact on AAC is possible; possible impact on operational costs
Hunting and Fishing GMD	NA	NA	Not simulated, no likely impact on AAC, possible impact on operational costs
Recreation GMD: protection of features, facilities, trails, provision of motorized and non-motorized opportunity	NA	NA	Protection of features, facilities and trails was simulated in SELES (500m buffer around identified items; minimum 70% mature or old criterion). Motorized/non-motorized GMD were not simulated, and would have little or no impact on AAC or costs
Settlement GMD	NA	NA	Not simulated, no likely impact on AAC or costs

Table 29 Morice Area Timber Harvesting Constraints in Timber Supply Review & LRMP

Forest Management Initiative	TSR 2 Base Case	TSR 2 Sensitivity Run	Morice LRMP Scenario and MLM[81] Simulation
Visual Resource GMD	NA	NA	SELES simulated as described above.
Access GMD	NA	NA	Not simulated, no significant impact on AAC likely, possible impact on operational costs.
Agriculture and Range GMD	~21,000 ha removed from THLB[82]	NA	Specific locations and maximum rates of agricultural land expansion were simulated according to LRMP direction.
Botanical Forest Products GMD	NA	NA	Not simulated. Potentially significant impacts on AAC and/or costs. (eg. imposition of RNV criterion over an additional 25% of THLB could mean ~~4% impact because RNV over all THLB resulted in >15% impact.)
Guide Outfitting GMD	NA	NA	Not simulated, no likely impact on AAC, little or no impact on costs.
Minerals and Energy GMD	NA	NA	Not simulated, no likely impact on AAC or costs.
Timber GMD	NA	NA	Not simulated, impact on AAC if any would be positive, possible impact on operational costs.
Tourism GMD	NA	NA	SELES simulation included minimum 90% mature or old within 1000 m of lodges, and 500m of cabins, and minimum of 70% mature or old within 500m of other features and facilities (see above).
Trapping GMD	NA	NA	Not simulated, no likely impact on AAC, little or no impact on costs.
Biodiversity GMD: seral state representation	see above	see above	SELES simulated RNV in HBEA, 2XRNV elsewhere except ASM and PA. Whether modeled impacts are complete depends on how much additional area will be put under HBEA status under 10-20% GMD.
Biodiversity GMD: patch size distribution	NA	NA	Not simulated. Impacts on AAC should be minor; greater numbers of large patches may actually lower costs.
Biodiversity GMD: WTP retention, ecological rotation	see above	see above	Simulation was same as TSR2 (see above).
Biodiversity GMD: ecological rotation on large blocks	NA	NA	Ecological rotation length on some large cutblocks simulated.
Biodiversity GMD: coarse woody debris	NA	NA	Not simulated, no significant impact on AAC likely, possible impact on operational costs.

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[82] This area was mistakenly identified in the TSR2 report as agricultural leases, it was probably agricultural land reserve on Crown land.

Table 29 Morice Area Timber Harvesting Constraints in Timber Supply Review & LRMP

Forest Management Initiative	TSR 2 Base Case	TSR 2 Sensitivity Run	Morice LRMP Scenario and MLM[81] Simulation
Biodiversity GMD: tree species diversity	NA	NA	Not simulated, significant impact on AAC unlikely (deciduous leading sites are outside THLB), possible impact on operational costs
Biodiversity GMD: regionally significant and sensitive ecoystems and features	?	?	Protection of some ecosystems and features was simulated under ASM, recreation, or tourism rules. AAC and cost impacts of remaining items should be small due to limited size of area involved
Biodiversity GMD: Culturally significant ecosystems	NA	NA	Not simulated. Potentially significant impacts on AAC and/or costs (eg. imposition of RNV criterion over an additional 25% of THLB could mean ~~4% impact because RNV over all THLB resulted in >15% impact.)
Biodiversity GMD: Red and Blue ecosystems	NA	NA	Not simulated. Impact on AAC and costs likely small, but uncertain due to widespread nature of some blue listed ecosystems
Biodiversity GMD: natural succession pathways	NA	NA	Not simulated. Potentially significant affects on AAC (if regen. delay causes 25% loss of timber, 5% natural regen. could cost ~1% of AAC). Impacts of lack of stand tending are uncertain, not much stand tending is done anyway. Costs would be reduced
Fish and Aquatic GMD	see above	see above	TSR2 riparian rules were used in SELES simulations. Detailed simulation of F&A GMD were not undertaken. Likely impacts on AAC are uncertain. Costs would likely be higher due to GMD requirements for assessment, monitoring, rehabilitation, restoration of stream habitat, and avoidance of bull trout areas
Protected areas GMD	NA	NA	SELES simulation included removal of protected areas from THLB, but PA GMD were not specifically simulated, and would have no affect on AAC or costs
Water GMD	NA	NA	Not simulated. Impacts of GMD *per se* on AAC likely small, cost would be higher due to assessment provisions
Wildlife GMD	NA	NA	Impacts of development on key wildlife were simulated using SELES/NETICA. Effects of GMD on timber were not simulated. Likely effects on AAC will be small because provisions relate more to scheduling than to existence of harvest. Costs could be increased by assessment provisions
No Harvest on Islands in Lakes	NA	NA	Removal from THLB
Area Specific Direction	NA	NA	SELES was used to simulate ASM rules regarding harvest exclusion and seral state targets. Details are documented elsewhere in simulation instructions

Table 30 Incremental Cost Impacts of the Morice LRMP on Timber Harvesting Activities

Base Case Mgmt. Initiative	TSR 2 Base Case	Morice LRMP Mgmt. Direction	Incremental Harvest Volume Impacts	Incremental Harvest Cost Impacts	Source of Initiative	TSA Cost Impact Significance	Licensee's Comments
Proposed Protected Area Package	10 year harvest deferral in proposed protected areas	Smaller package of protected areas, but substantial new harvest exclusion areas	Fully simulated in MLM	No Impacts	N/A	N/A	The investment in silviculture activities, if there area any in the harvest exclusion zones, should be accounted for. I suggest using the interior Appraisal Manual costs for an estimate of Silviculture dollars already invested.
Landscape-Level Biodiversity	Old-seral guidelines from FPC	Range of Natural Variation targets	Fully simulated in MLM	See comments	LRMP	$0.160	Reduced volume (-5%) taken from any given operating area, over which to amortize infrastructure costs like roads and bridges.
Visual Quality	Modeled VQO guidelines	Added new VQAs and altered VQOs for some VQAs	Fully simulated in MLM	See comments	LRMP	$0.150	VIA analysis cost about $3,500 per 60 ha. block or about $.58 per Ha. or <.01 m3. In addition there is increased logging cost for partial cutting systems and small blocks. About $0.50 to $1.00 per m3. I suggest that this be estimated by determining how much area (volume) the SELES model is harvesting in newly designated scenic areas and multiply by the increased cost for that volume. We would then divide by the total harvest volume to get an estimate of the incremental cost. I don't have the data but if I assume an additional 100,000 ha. in new scenic areas and this is 20% of the THLB, then we can say that the harvesting cost impact would be $0.10 to $0.20 for the entire TSA. Average about $0.15
Telkwa Caribou Herd Management	Modeled	Modeled for specific forested habitats rather than as an average over the whole caribou management area	Fully simulated in MLM	No Impacts	N/A	N/A	
Integrated Resource Management Zone	Max. allow. dist. and greenup	No change	Fully simulated in MLM	N/A	N/A	N/A	If Patch size is implemented than there should be no green up rule, only maximum allowable early seral except for VQO veg height. This may be a beneficial impact.
Zone 'A' Morice River LRUP	Modeled	Area Specific Management (ASM)	Simulated ASM rules for forest age, with LRMP boundaries	No Impacts	N/A	N/A	

Table 30 Incremental Cost Impacts of the Morice LRMP on Timber Harvesting Activities

Base Case Mgmt. Initiative	TSR 2 Base Case	Morice LRMP Mgmt. Direction	Incremental Harvest Volume Impacts	Incremental Harvest Cost Impacts	Source of Initiative	TSA Cost Impact Significance	Licensee's Comments
Recreation Areas (RA) of Outstanding Value and RAs with High Environmental Sensitivity	Excluded from THLB (6503 ha)	Area Specific Management for some RAs or portions	Simulated ASM rules for forest age, with LRMP boundaries	No Impacts	N/A	N/A	
High Value Recreation Areas and Areas Requiring Special Management	No deductions, likely a small overestimation of timber supply	Area Specific Management for some RAs or portions	Simulated ASM rules for forest age, with LRMP boundaries	No Impacts	N/A	N/A	
Owen Lake area (Wet'suwet'en)	No deductions	Area specific management (ASM)	Simulated ASM rules for forest age, with LRMP boundaries	No Impacts	N/A	N/A	
Riparian Reserve Zones	Excluded from THLB	No change	All areas fully excluded	N/A	N/A	N/A	
Riparian Management Zones (S1 and S2)	1,028 ha excluded from THLB	No change	All areas fully excluded	N/A	N/A	N/A	
Agricultural Reserve Lands	removed from THLB	Specified locations and rates of expansion	Same as TSR2	N/A	N/A	N/A	
Wildlife Tree Patches	3.6% Yield Curve Reduction	Expanded WTP requirements for large cutblocks/patches	Fully simulated in MLM	See comments	LRMP	Accounted for in Landscape Level Biodiversity	See comments above in landscape level biodiversity will have an impact on amortization. Already accounted for there
	NA	Biodiversity GMD ecological rotation on large blocks	Fully simulated in MLM	See Comments	LRMP	Accounted for in Landscape Level Biodiversity	See comments above in landscape level biodiversity will have an impact on amortization. Already accounted for there
	NA	Recreation GMD - Features, facilities and trails; non-motorized areas; best management practices; consultation	Largely Simulated	See Comments	LRMP	Accounted for in visual quality and consultation	See comments above in landscape level biodiversity will have an impact on amortization. Already accounted for there. Also see comments for visual quality. Small patches or selective harvest likely to be used in these areas. Use the same calculation as visual quality to determine TSA impact. In addition there is a consultation impact accounted for in that section

Table 30 Incremental Cost Impacts of the Morice LRMP on Timber Harvesting Activities

Base Case Mgmt. Initiative	TSR 2 Base Case	Morice LRMP Mgmt. Direction	Incremental Harvest Volume Impacts	Incremental Harvest Cost Impacts	Source of Initiative	TSA Cost Impact Significance	Licensee's Comments
		Tourism GMD - Lodges, cabins, features, facilities and trails.	Largely Simulated	See Comments	LRMP	Accounted for in visual quality and consultation	See comments above in landscape level biodiversity, will have an impact on amortization. Already accounted for there. Also see comments for visual quality. Small patches or selective harvest likely to be used in these areas. Use the same calculation as visual quality to determine TSA impact. In addition, there is a consultation impact accounted for in that section
	see above	Biodiversity GMD: seral state representation	Largely Simulated	See comments	LRMP	Accounted for in Landscape Level Biodiversity	See comments above in landscape level biodiversity, will have an impact on amortization. Already accounted for there
	"	Biodiversity GMD: regionally significant and sensitive ecoystems and features	Partially Simulated	See comments	LRMP	Accounted for in Landscape Level Biodiversity	See comments above in landscape level biodiversity, will have an impact on amortization. Already accounted for there if this has an impact on AAC from the base case
	see above	Fish and Aquatic GMD	Only TSR2 riparian rules were simulated	See comments	LRMP	$0.050	Development of BMP's could be significant if research dollars ($100, 000 per year?) are included to develop them. In addition, AAC impacts could increase amortization costs
	NA	Biodiversity GMD: natural succession pathways	Not simulated, potentially significant impact on AAC	See comments	LRMP	Accounted for in Landscape Level Biodiversity	See comments above in landscape level biodiversity will have an impact on amortization. Already accounted for there if this has an impact on AAC from the base case.
	NA	Cultural Heritage GMD: Consultation and non-disturbance	Not simulated, potential impacts on AAC	See comments	LRMP	$0.020	See comments above in landscape level biodiversity will have an impact on amortization. Already accounted for there if this has an impact on AAC from the base case. Additional $0.02 per m3 consultation on cost for First Nation
	NA	Botanical Forest Products GMD	Not simulated, potential impacts on AAC	See comments	LRMP	Accounted for in Landscape Level Biodiversity	See comments above in landscape level biodiversity, will have an impact on amortization. Already accounted for there if this has an impact on AAC from the base case.
	NA	General GMD: Invasive species control, point source pollution, fertilizer use	No Impacts	See comments	FRPA	$0.010	Control measures for invasive species estimate $20, 000 per year in mapping and control costs on Forest Roads. Is also a requirement of FRPA.

Table 30 Incremental Cost Impacts of the Morice LRMP on Timber Harvesting Activities

Base Case Mgmt. Initiative	TSR 2 Base Case	Morice LRMP Mgmt. Direction	Incremental Harvest Volume Impacts	Incremental Harvest Cost Impacts	Source of Initiative	TSA Cost Impact Significance	Licensee's Comments
		Consultation GMD	No Impacts	Harvest Delays	LRMP	$0.025	Would be about $.025 per m3 based on $400 per block dived by 60 ha = 6.67 per ha X 7,500 per year approximately $.025 per year.
		Air Quality GMD: productive use of wood residue, scheduling burning activities	No Impacts	Penalties assessed if Exemptions not granted	LRMP	Minor	
	NA	Access GMD: access management planning	No Impacts	?	LRMP	$0.050	If forest sector is responsible for installation, maintenance, and enforcement then there will be an incremental cost. Estimate $100 K per year
		Agriculture and Range GMD: expansion lands, harvest scheduling and grass seeding prescriptions	See ALR above	?	LRMP	Minor	The range sector would be expected to incur the cost of seeding for range purposes.
	NA	Water GMD: watershed integrity	No impacts	?	LRMP	$0.020	$40,000 per watershed for assessment. I per year.
		Wildlife GMD	No Impacts	No Impacts	LRMP	Minor	Field crews may need training.
	NA	Biodiversity GMD: coarse woody debris	No Impacts	No Impacts	LRMP		
		Biodiversity GMD species diversity	?	No Impacts	LRMP	Minor	Field crews may need training. Minor additional assessment costs.
	NA	Biodiversity GMD: Red and Blue ecosystems.	Not simulated, impact on AAC likely small	No Impacts	LRMP	Minor	Field crews may need training. Minor additional assessment costs.
	NA	Biodiversity GMD: Culturally significant ecosystems	Not simulated, potential impacts on AAC	No Impacts	LRMP	Minor	Field crews may need training. Minor additional assessment costs. If there are AAC impacts it will affect amortization.
	NA	Biodiversity GMD: patch size distribution, more large patches	No Impacts	No Impacts	LRMP	Neutral	
	Area Specific Management Zones						
	Bulkley River	water resource management, riparian areas	Riparian simulated through GMD	No Impacts	LRMP	Neutral	

Table 30 Incremental Cost Impacts of the Morice LRMP on Timber Harvesting Activities

Base Case Mgmt. Initiative	TSR 2 Base Case	Morice LRMP Mgmt Direction	Incremental Harvest Volume Impacts	Incremental Harvest Cost Impacts	Source of Initiative	TSA Cost Impact Significance	Licensee's Comments
	Friday/Nakinilerak	30% mature and old, natural regeneration*, no range leases (Nakinilerak), fly in only to Friday Lake	HBEA Simulated	See comments	LRMP	Accounted for in Landscape Level Biodiversity	See comments above in landscape level biodiversity will have an impact on amortization. Already accounted for there.
	Gosnell/Thautil	High biodiversity emphasis (50% mature and old), minimize road density	HBEA Simulated	See comments	LRMP	Accounted for in Landscape Level Biodiversity	See comments above in landscape level biodiversity will have an impact on amortization. Already accounted for there.
	Grease Trail	No harvest/HBEA buffers, non-motorized summer rec.	No Harvest Core and HBEA Buffer Simulated	See comments	LRMP	Accounted for in Landscape Level Biodiversity	See comments above in landscape level biodiversity will have an impact on amortization. Already accounted for there.
	Herd Dome	No timber harvest, summer non-motorized	Exclusion	See comments	LRMP	Accounted for in Landscape Level Biodiversity	
	Matzehtzel/Nez	access to avoid wetlands, summer motorized hard surf	Not Simulated	No Impacts			
	Morice Lake	No harvest, no new roads no settlement	Exclusion	See comments	LRMP	Accounted for in Landscape Level Biodiversity	
	Morice Mountain	Motorized recreation mgmt, allow natural succession	Not Simulated	See comments	LRMP	Accounted for in Landscape Level Biodiversity	Because this area has already burned, no treatment will be planned. Will not reduce silv. costs because we would not harvest.
	Morice River	No floodplain harvest, limited harvest within buffer (50% mature and old)	Fully simulated in MLM	See comments	LRMP	Accounted for in Landscape Level Biodiversity	See comments above in landscape level biodiversity will have an impact on amortization. Already accounted for there.
	Upper Morice River	No floodplain harvest, limited harvest within buffer (70% mature and old)	Fully simulated in MLM	See comments	LRMP	Accounted for in Landscape Level Biodiversity	See comments above in landscape level biodiversity will have an impact on amortization. Already accounted for there.
	Morrison Lake/Babine East	30m Reserve zone, 130m Riparian mgmt., 1500 HBEA	Fully simulated in MLM	See comments	LRMP	Accounted for in Landscape Level Biodiversity	See comments above in landscape level biodiversity will have an impact on amortization. Already accounted for there.

Table 30 Incremental Cost Impacts of the Morice LRMP on Timber Harvesting Activities

Base Case Mgmt. Initiative	TSR 2 Base Case	Morice LRMP Mgmt. Direction	Incremental Harvest Volume Impacts	Incremental Harvest Cost Impacts	Source of Initiative	TSA Cost Impact Significance	Licensee's Comments
	Nanika River	No floodplain harvest, HBEA buffer (70% mature and old), no water diver.	HBEA simulated	See comments	LRMP	Accounted for in Landscape Level Biodiversity	See comments above in landscape level biodiversity will have an impact on amortization. Already accounted for there
	Nadina - Owen	Very limited timber harvest	70% mature and old simulated	See comments	LRMP	Accounted for in Landscape Level Biodiversity	See comments above in landscape level biodiversity will have an impact on amortization. Already accounted for there
	Nadina River	No floodplain harvest, HBEA buffer (50% mature and old)	Fully simulated in MLM	See comments	LRMP	Accounted for in Landscape Level Biodiversity	See comments above in landscape level biodiversity will have an impact on amortization. Already accounted for there
	Old Man Lake/ China	No timber harvest, motorized hard surface only	Exclusion	See comments	LRMP	Accounted for in Landscape Level Biodiversity	See comments above in landscape level biodiversity will have an impact on amortization. Already accounted for there
	Starr Creek	No timber harvest*, manage for motorized/non-motorized	Exclusion	See comments	LRMP	Accounted for in Landscape Level Biodiversity	See comments above in landscape level biodiversity will have an impact on amortization. Already accounted for there
	Tahtsa/Troitsa	No timber harvest, manage for motorized/non-motorized	Exclusion	See comments	LRMP	Accounted for in Landscape Level Biodiversity	See comments above in landscape level biodiversity will have an impact on amortization. Already accounted for there
	Twinkle - Horseshoe	Non-motorized recreational use	No Impacts	No impacts			

APPENDIX 3 MINING SECTOR

The Morice LRMP Base Case SEA provides a detailed description of the mining sector in the Morice LRMP area.

Table 31 Existing and Past Producers in the Morice LRMP Area

	Location	Production Years	Type of Deposit	Employment
Existing Producer: Huckleberry Mine (Imperial Metals Corporation (50% and Japan Group (50%))	86 km southwest of Houston	Currently in operation; started in 1997	Open pit copper, gold, silver, molybdenum	215 employees; 38% reside in Morice LRMP, 42% in Smithers, Telkwa, Burns Lake & 20% outside region
Major Past Producers				
Granisle (Noranda Inc.)	MacDonald Island in Granisle Lake, 50 km north of Topley	1966 to 1982	Copper, silver and gold	
Bell Copper (Noranda)	Newman Peninsula, near Village of Granisle	1972-1992	Copper	Bell Copper employed 700 in 1979
Equity Silver (Placer Dome Inc.)	35 km southeast of Houston on boundary of Morice LRMP	1981-1994	Silver & gold	Average workforce of 350

Note: Other smaller past producers include underground mines such as Silver Queen, Dome Mountain and Golden Eagle (Background report lists 11 past producers including these 3).
Source: Pacific Analytics Inc. et al., *Morice LRMP Base Case Socio-Economic Assessment*, 2003.

The following tables summarize the economic impacts of the Huckleberry mine that were reported in the Morice LRMP Base Case SEA. The tables also show an estimate of Net Economic Value.

Table 32 Economic Impacts from the Huckleberry Mine

Economic Impacts of the Huckleberry Mine	2002 Direct Impacts	$ per FTE
Direct Employment	215FTEs	
Direct Employment Income	$13.90Million	$64,665
Direct GDP	$38.95Million	$181,163
Direct Provincial Taxes and Levies	$1.90Million	$8,837

Source: Pacific Analytics Inc. et al., *Morice LRMP Base Case Socio-Economic Assessment*, 2003.

Net Economic Value		Morice Area, $ Million	$ per FTE
Public Sector Rent	Gov't revenues excl. income taxes	$0.95	$4,419
Labour Rent	5 % of direct wages and salaries	$0.7	$3,233
Industry Rent	Minimal	Minimal	Minimal
TOTAL NET ECONOMIC VALUE		$1.645	$7,652

Note:
Public sector rents are assumed to equal approximately half of the $1.9 million reported in the Base Case SEA for government revenues, as the $1.9 million includes direct corporate taxes as well as employee income taxes. The B.C. mining industry in 2002 paid $333 million in government revenues of which about half were for direct corporate taxes ($179 million) and the other half ($154 million) were for employee related income taxes. (PriceWaterhouseCoopers, *The Mining Industry in B.C. – 2002*, May 2003, 30 pages).
Source: prepared by *Pierce Lefebvre Consulting*.

The Morice LRMP area is provincially significant in terms of mineral potential. The Morice LRMP area has approximately 1.6% of the B.C. landbase, but 3% of B.C.'s high mineral potential and 4.2% of B.C.'s Moderate to High potential. There are no lands in the Morice LRMP area that are rated as having Low or Low to Moderate mineral potential.

Table 33 Metallic Mineral Potential for the Morice LRMP Area and for B.C.

Mineral Potential	B.C. Area	B.C. %	Morice Area	Morice %	Morice as a % of B.C.
Low	19,190,615	19.8%	0	0.0%	0.00%
Low to Moderate	20,203,072	20.8%	4	0.0%	0.00%
Moderate	19,295,562	19.9%	84,275	5.6%	0.44%
Moderate to High	18,862,438	19.5%	809,420	53.9%	4.29%
High	19,395,921	20.0%	608,011	40.5%	3.13%
	96,947,607	100.0%	1,501,711	100.0%	

Source: Ministry of Energy and Mines MINFILE database, February 2004; MSRM Area Statistics for the Morice LRMP area, April 2004.

The B.C. Ministry of Energy and Mines reports approximately $2 million in exploration expenditures per year (2002$) for the Morice LRMP area from its ARIS database, or 4.3% of all B.C. ARIS expenditures for 1970 to 2002. This compares to the Morice LRMP area accounting for 1.6% of the B.C. landbase. ARIS expenditures account for approximately half of all exploration expenditures in B.C., implying that mineral exploration may be as much as $4 million per year in the Morice LRMP area.

The Morice LRMP Base Case SEA provides a list of 17 key known deposits in the Morice LRMP area. Some of the major deposits include:

- The Bell Mine deposit: 71.7 million tonnes at 0.46% Cu, 0.23 g/t Au;
- The Berg deposit: 238 million tonnes at 0.39% Cu; 0.031% Mo; and
- The Morrison deposit and adjacent Hearne Hill deposit:
    - Morrison deposit: (Noranda (50%), Pacific Booker Minerals Inc. (50%)); 20 km from Bell Copper Mine and Granisle Mine; 71 million tonnes at 0.47% Cu, 0.22 g/t Au; copper-gold porphyry deposit; and
    - Hearne Hill deposit (Pacific Booker Minerals Inc.): 947,000 tonnes at 0.41% Cu, 0.18 g/t

Au; porphyry copper-molybdenum-gold deposit

Table 34 Mineral Exploration Expenditures for B.C. and Morice LRMP Area

Year	BC ARIS Expenditures ($ Million)		Morice LRMP Area ARIS Expenditures ($ Million)		MORICE % of BC
	$ Current	$2002	$ Current	$2002	
1970	$3.7	$17.8	$0.35	$1.71	9.59%
1971	$3.1	$14.6	$0.16	$0.74	5.08%
1972	$3.2	$14.6	$0.20	$0.91	6.25%
1973	$4.1	$17.2	$0.14	$0.57	3.29%
1974	$7.3	$27.9	$0.74	$2.82	10.14%
1975	$7.1	$24.1	$0.48	$1.64	6.80%
1976	$6.4	$20.4	$0.48	$1.52	7.47%
1977	$8.8	$25.9	$0.21	$0.61	2.37%
1978	$12.1	$30.8	$0.27	$0.69	2.24%
1979	$19.9	$47.9	$0.39	$0.93	1.94%
1980	$33.2	$73.2	$2.38	$5.24	7.16%
1981	$45.8	$88.4	$1.79	$3.46	3.91%
1982	$21.7	$38.0	$0.77	$1.34	3.54%
1983	$29.6	$49.0	$1.08	$1.79	3.65%
1984	$28.2	$44.9	$0.52	$0.82	1.84%
1985	$28.5	$44.0	$0.48	$0.74	1.67%
1986	$64.6	$96.9	$3.59	$5.39	5.56%
1987	$79.4	$115.6	$3.01	$4.38	3.79%
1988	$75.8	$106.5	$2.82	$3.96	3.72%
1989	$61.2	$82.2	$1.55	$2.08	2.53%
1990	$63.8	$81.3	$1.59	$2.03	2.50%
1991	$56.1	$68.0	$1.25	$1.51	2.22%
1992	$27.1	$31.9	$0.56	$0.66	2.07%
1993	$16.8	$19.2	$1.11	$1.27	6.62%
1994	$34.9	$39.0	$2.63	$2.93	7.52%
1995	$31.4	$34.4	$0.26	$0.28	0.82%
1996	$46.7	$50.5	$1.80	$1.95	3.87%
1997	$51.7	$55.6	$6.63	$7.12	12.82%
1998	$22.5	$24.1	$0.40	$0.42	1.76%
1999	$12.1	$12.9	$0.23	$0.24	1.90%
2000	$13.6	$14.2	$1.09	$1.13	7.98%
2001	$15.9	$16.3	$0.27	$0.27	1.69%
2002	$19.1	$19.1	$1.68	$1.68	8.83%
Totals	$955.5	$1,446.4	$40.9	$61.9	4.28%
Annual Avg.	$29.0	$43.8	$1.2	$1.9	4.28%

Source: B.C. Ministry of Energy and Mines, ARIS database, www.gov.bc.ca/em, February 2004.

APPENDIX 4 AGRICULTURE SECTOR

Cattle ranching is the most common form of agriculture in the Morice LRMP area, and access to crown lands for grazing is crucial to the viability of these operations. There are an estimated 16,076 Animal Unit Months (AUMs)[83] of crown land grazing in the Morice LRMP area, or approximately 1.8% of all AUMs in B.C. Crown tenures are held primarily to support livestock cow/calf operations.

The agriculture and food sector for the Morice LRMP area accounts for 2% of before tax income and 92 direct, indirect and induced jobs. This includes farms (including fish hatcheries/ aquaculture), activities supporting farms, meat processing and other related industries.

Range and Beef Production

Within the Morice LRMP area, the existing range tenures are concentrated in three main areas:

- Along the Bulkley River between Houston and Topley as well as between Houston and the western boundary of the Morice LRMP area.
- Along the Morice River south of Houston.
- North of Francois Lake and south of Parrott Creek and continuing west along the Nadina River and along the northern shore of Tagetochlain Lake.

The Morice LRMP Base Case SEA reports 2001 Census agricultural data for the Bulkley Nechako Subdivision G, which includes Houston, Topley and Granisle. The main area of existing rangelands that is excluded from sub-division G is the area north of Francois Lake and Tagetochlain Lake. A review of the map of existing range tenures and leases as of December 2002[84] shows that this area has approximately one third of the existing range areas in the Morice LRMP region.

In B.C., the beef cattle industry generates an estimated $225 million in production value and full time and seasonal employment for 7,500 people. Farm labour typically includes the owner operators with seasonal workers during peak periods of stock handling and crop harvesting, and data on full time equivalent positions are not available. Range fees paid to governments add to $2.20 per AUM.

The following table provides data on AUMs for the Morice LRMP area and for B.C., as well as the socio-economic impacts associated with the beef cattle industry. As shown on that table, assuming that the Morice LRMP area accounts for approximately 1.8% of the B.C. beef cattle industry, the annual production value of the Morice LRMP area beef cattle industry is estimated at $4 million[85], range fees at $35,844 and net economic value at $62,285.

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[83] Animal Unit Month (AUM) – Unit for measuring forage or grazing capability of Crown range land; represents the amount of forage consumed in one month by a 454 kg (1000 pound) cow, either dry or with calf up to six months of age. (Source: B.C. Ministry of Forests, *1994 Forest, Range & Recreation Resource Analysis*, Appendix C-1).

[84] MSRM, *Morice Land & Resource Management Plan Participant Handbook*, January 2003, Map of Existing Range Tenures.

[85] The Morice LRMP Base Case SEA reports that the Bulkley Nechako Subdivision G has a total of 48 farms, 4,814 cattle and calves and $2.772 million in revenues (2001 Census data), but the Bulkley Nechako Subdivision G excludes the existing rangelands near Francois Lake. The Base Case also reports data for Census Sub-Division A (Smithers, Telkwa and surrounding area), which is outside the Morice

Table 35 Socio-Economic Impacts of Beef Production

	Total B.C.	B.C. Per AUM	Base Case Data	Estimate for Morice LRMP Area
Selected Impact Data:				
AUMs	897,000 AUMs			16,076 AUMs
%				1.8%
Beef Cows	279,927 Beef Cows	0.31		5,017 Beef Cows
Calves	250,000 Calves	0.28		4,480 Calves
Value of Production	$225 Million	$251	$17.5	$4.03 Million
% of Base Case Data				23%
Number of Persons Involved	7,500 people			134 people
Direct Employment (FTEs)[1]			85	20 FTEs
GDP from Direct Activities			3.84	$0.9 Million
Estimated Wages/ Salaries				$0.5 Million
Government Revenues:				
Range Fees	$2 Million	$2.2		$0.036 Million
Land and Property Taxes	$9 Million			
Sub-Total	$11 Million		$0.2	$0.046 Million
Net Economic Value:				
Industry Rent				Minimal
Labour Rent				$26,441
Range Fees				$35,844
				$62,285

Notes:

1. Farm labour typically includes the owner operators, with seasonal workers during peak periods of stock handling and crop harvesting; the number of FTEs is a fraction of the number of individuals involved in the sector.
2. The net economic value accruing to the owner/operator/workers is assumed to be 5% of production value. This would accrue to all factors of production, not only range lands and as a result, cannot be entirely attributed to the 16,076 AUMs of crown land grazing activity.

Source: Based on following sources:
MSRM, *Morice Land & Resource Management Plan Participant Handbook*, January 2003, Map of Existing Range Tenures.
Pacific Analytics Inc. et al., *Morice LRMP Base Case Socio-Economic Assessment*, Prepared for MSRM, Skeena Region, 2004.
B.C. data are from: B.C. Ministry of Agriculture, Food and Fisheries, *2003/04-2005/06 Service Plan*, 2003, www.bcbudget.gov.bc.ca; Economic Impact data are from: B.C. MSRM (Grant Henry), *Beef Production - An Economic Profile*, 2003.

The estimated value of production of approximately $4 million for the Morice LRMP area appears reasonable based on the 2001 Census data for sub-division G.

The following table shows agriculture production data for the Census sub-divisions that border the Morice LRMP area including:

LRMP area.

- Sub-Division A: Smithers, Telkwa and surrounding areas;
- Sub-Division B: Burns Lake and surrounding area including a small area near Babine Lake that is part of the Morice LRMP area; and
- Sub-Division E: includes area east of the Morice TSA to Fraser Lake and includes almost all of Francois Lake, Eutsuk Lake and all of Tetachuk Lake, Eutskuk Lake and Ootsa Lake.

As shown on the following table, gross farm receipts add to $2.77 million for sub-division G, but this excludes the rangelands near Francois Lake which are included in sub-division E. Sub-division E includes only a small part of the Morice LRMP area.

Table 36 Selected Agriculture Statistics by Census Sub-Division for 2001

Bulkley Nechako Regional District (BNRD) Census Sub-Division	G	E	B	A	Other	Total
	Most of Morice LRMP Area	Francois, Ootsa & Tetachuk & Eutsuk Lakes	Burns Lake	Smithers/ Telkwa	Sub-Div. C, D & F	BNRD
Number of Farms	77	116	38	185	390	806
Number of Cattle Farms	38	66	16	82	225	427
Farms Reporting Greater than $10,000 in Gross Farm Receipts	36	77	16	121	251	501
Total Receipts ($ Million)	$2.77	$6.07	$0.88	$14.70	$27.26	$51.68
Receipts as a % of BNRD	5.4%	11.7%	1.7%	28.4%	52.8%	100.0%
Bulls, 1 Year and Over	142	311	35	245	844	1,577
Dairy Cows	0	10	n/a	1,050	n/a	1,757
Beef Cows	2,280	5,917	n/a	4,753	n/a	28,984
Total Cows	2,280	5,927	632	5,803	16,099	30,741
Total heifers, 1 year and over	410	1,191	164	1,812	5,121	8,698
Steers, 1 year and over	201	437	107	812	4,314	5,871
Calves, under 1 year	1,808	5,010	579	4,942	14,165	26,504
Total Cattle & Calves	4,841	12,876	1,517	13,614	40,543	73,391
Cattle & Calves as a % of BNRD	6.6%	17.5%	2.1%	18.5%	55.2%	100.0%

Source: BC Stats based on 2001 Canada Census.

The table also shows that total receipts for Sub-Division A (the area surrounding Smithers and Telkwa) are $14.7 million, which together with Sub-Division G receipts of $2.8 million add to the $17.5 million referred to in the Morice LRMP Base Case SEA.[86] Since Sub-Division A is not part of the Morice LRMP area, the economic impacts associated with that Sub-Division are excluded from this assessment.

The Morice Planning Area Background Report[87] indicates that there may be some potential to add 15 range tenures in the Morice LRMP area, but does not specify the number of AUMs this would support. The Background Report (page 79) indicates that there are no estimates of AUM carrying capacity, but Bob Fowler of the Ministry of Forests indicated that forage capability could be double the number of existing AUMs.[88] A review of a map showing range potential for the Morice LRMP area shows that much of the Morice LRMP area could be used as rangeland.

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[86] Pacific Analytics Inc. et al., *Morice LRMP Base Case Socio-Economic Assessment*, 2003, page 55.

[87] Source: Horn, Hannah and Gregory C. Tamblyn, *Morice Planning Area Background Report: An Overview of Natural, Cultural, and Socio-Economic Features, Land Uses and Resources Management*, prepared for Prince Rupert Interagency Management Committee, Final Draft, May 2000; Also, The Morice Government Technical Team, *Resource Analysis Report, Agriculture and Range*, April 11, 2003.

The crown grazing land in the Morice LRMP area covers 130,818 hectares, or 8.8% of the total plan area. The Agricultural Land Reserve (ALR) accounts for 39,154 hectares, or 2.6% of the total plan area.

Table 37 Existing and Potential Area for Agriculture

	Existing Use	
	Agriculture Land Reserve (1):	% of Land Base
Private	16,067 hectares	1%
Crown	23,087 hectares	1.6%
Total	39,154 hectares	2.6%
Grazing Land Area (range tenures)	130,818 hectares	8.8%
Total Land Area	1.5 million hectares	100.0%
	Potential Use	
Lands with High Arability Potential (2)	52,436 hectares	3.5%

Source:

1. The Morice Government Technical Team, Resource Analysis Report, Agriculture and Range, April 11, 2003.
2. Area Statistics, MSRM, February 2004. Appendix 11 provides more detail.

A review of the map of the Canada Land Inventory[89] shows that the ALR is concentrated in the same general region where the existing rangelands are located. A review of the same map also shows CLI lands denoted as agriculture lands throughout the LRMP area, and in particular in areas surrounding Babine Lake and Fulton Lake in the northern part of the LRMP area, as well as between Ootsa Lake and the Nadina River in the southern part of the LRMP area.

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[88] Source: Personal communication with Leah Sheffield of MSRM, January 2004.

[89] B.C. MSRM Skeena Region, *Morice Land & Resource Management Plan, Participant Handbook*, 2003, Map of Canada Land Inventory.

APPENDIX 5 COMMERCIAL MID-COUNTRY & BACKCOUNTRY TOURISM SECTOR

This appendix assesses the socio-economic significance of mid-country and backcountry commercial tourism operations. This includes guided hunting, guided angling, and adventure travel operators.

Appendix 5-1 Summary of Impacts

There may be as many as 45 guide outfitting, fishing guides and other adventure operations that derive part or all of their income from the Morice LRMP area. In addition, there are also between 15 and 20 mid-country and back-country lodges and resorts.

Table 38 Estimated Number of Commercial Tourism Operators in Morice LRMP Area

	Approximate
Number of Fishing Guides	19 to 26
Number of Guide Outfitters	9
Number of Other Adventure Operations	5 to 10
	33 to 45

Source: *Pierce Lefebvre Consulting* from various sources.

Many of the businesses obtain only part of their income from the Morice LRMP area and there may be some double-counting as some businesses may offer more than one activity. For example, it is common for guide outfitters to offer other backcountry activities including guided fishing. Nevertheless, a review of a list of tourism businesses for the Morice LRMP area prepared as part of the Tourism Opportunity Study[90] identifies 40 individual backcountry tourism operators as follows:

- 26 individual fishing guides (based on mailing addresses, half of these are based in Houston or Smithers and the other half are based in Terrace, Prince George or elsewhere in B.C., with one residing in Calgary);
- 9 guide outfitters, 3 of which have base camps or satellite camps in the Morice LRMP area; and
- 5 other operators offering tours and other wilderness experiences.

That study database also lists 17 businesses that offer mid-country & backcountry lodging facilities. Most are fishing lodges/resorts on lakes such as Babine Lake, Nadina Lake and Francois Lake.

The following table summarizes the economic impacts associated with backcountry tourism in the Morice LRMP area. To the extent possible, the impacts have been estimated based on the activities taking place in the area (i.e. level of hunting effort and angling effort rather than the number of operators). As a result, the following economic data provide a clearer indication of the level of tourism activity taking place in the Morice LRMP area than is provided by the number of operators.

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[90] Source: Database of tourism operators prepared as part of the following: Office of the Wet'suwet'en et al., *Morice Forest District Tourism Opportunity Study*, 2002.

Table 39 Summary of Economic Impacts from Backcountry Tourism in Morice LRMP Area

Summary of Impacts	FTEs	Industry Revenues ($ Million)	GDP ($ Million)	B.C. Direct Government Revenues ($ Million)	Net Economic Value ($ Million)
Guide Outfitting	21.1	$1.81	$0.64	$0.08	$0.16
Guided Angling	12.8	$2.29	$0.94	$0.09	$0.19
Other Adventure Operations	9.0	$0.63	$0.38	$0.05	$0.05
Total	42.9	$4.73	$1.96	$0.21	$0.41

Notes: Does not add due to rounding.

1. Some of the employment impacts from lodging are included in the guide-outfitting, angling and other adventure operations.

Source: *Pierce Lefebvre Consulting* from various sources.

The Morice LRMP Base Case SEA estimated the total direct FTEs associated with front-country, mid-country and back-country tourism at 98 FTEs. After adjusting the data to better reflect the activities dependent on the Morice LRMP area, the plan area resources generate some 65 direct FTEs in the tourism sector.

Table 40 Total Front-Country, Mid-Country and Back-Country Tourism

Number of FTEs in Backcountry & Front-Country from Backcountry Tourism Activities	Total FTEs per Base Case	Adjusted Base Case FTEs for Morice LRMP Area
Backcountry:		
Guide Outfitting	52.5	21.1
Guided Angling	12.8	12.8
Other Backcountry Tourism	9.0	9.0
Sub-Total Backcountry	74.3	42.9
Resident Hunting	6.0	6.0
Non-local, non-commercial Angling	4.4	4.4
Sub-Total	84.7	53.3
Additional Non Res Hunting Exp.	2.6	1.0
Additional Non Res Angling Exp.	4.4	4.4
Other Commercial Tourism	6.0	6.0
Total Tourism	97.7	64.7

Note: The total FTEs indicated in the Base Case SEA include the impacts of all 4 wildlife management units that overlap the Morice LRMP area.

The following sub-sections provide more detail on the job and economic impacts associated with guided hunting, guided angling and other backcountry commercial tourism.

Appendix 5-2 Guide-Outfitting

The *Morice Planning Area Background Report* identifies 9 guide-outfitters whose territories overlap the Morice LRMP boundaries[91], with three of these having a base or satellite camp in the Morice LRMP area. The *Morice LRMP Base Case Socio-Economic Assessment* states that there are thirteen guide-outfitters operating in four Wildlife Management Units (WMUs) that overlap the

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[91] Source: Horn, Hannah and Gregory C. Tamblyn, *Morice Planning Area Background Report*, page 75.

Morice Plan Area, but these 4 WMUs cover 3.9 million hectares, which is 2.5 times the size of the Morice LRMP area.

Table 41 Wildlife Management Units Overlapping Morice LRMP Area

Wildlife Management Units (WMUs)	WMU Area (Hectares)	Approximate % in Morice LRMP Area	Approximate WMU Area in Morice LRMP Area (Hectares)
6-4	907,327	40%	362,931
6-8	975,430	40%	390,172
6-9	1,463,055	50%	731,528
7-27	589,909	15%	88,486
Total	3,935,721		1,573,117
Total Morice LRMP Area			1.5 million hectares

Note: Percentage in Morice LRMP area is based on a visual review of the map for Wildlife Management Units and is therefore approximate.
Source: Areas for WMUs are from: personal communication with John Thornton, B.C. Ministry of Water, Land and Air Protection, February 2004.

In B.C. out-of-province hunters are required by regulation to utilize the services of a B.C. licensed hunting guide. While guided hunting is the primary product offered by hunting guide operations, many also offer wilderness adventure and wildlife viewing tours outside of prime hunting seasons. The BC MWLAP hunting effort data show that from 1990 to 2002, average annual non-resident hunting effort for the 4 WMUs that overlap the Morice LRMP area totals 2,513 hunter days. After adjusting the data to account for the greater area covered by the 4 WMUs, the Morice LRMP area is estimated to accommodate 1,026 hunter days per annum.

Table 42 Estimated Level of Hunting Effort by Non-Residents in the Morice LRMP Area

All Large Mammals, Average Annual Data for 1990 to 2002	All 4 Wildlife Management Units	Estimate for Morice LRMP Area
Animals Killed	217	90
Number of Non-Resident Hunters	423	174
Hunter Days - Non-Residents	2,513	1,026

Note:
The Morice LRMP Base Case SEA provides slightly different data based on only 2001. Data can vary widely in any given year and this table is based on 1990 to 2002 averages. Coincidentally, the 1990 to 2002 averages of hunting days and number of clients for all 4 Wildlife Management Units are comparable to the 2001 data.
Source: B.C. Ministry of Land, Water, and Air Protection. The tables at the end of this section provide more data on level of effort by species.

The following table provides data collected by Pacific Analytics for guide-outfitters in the Skeena region. Key findings from the Skeena data are:

- Guide outfitters in the Skeena region rely on guided hunting for 73% of their revenues;
- Guided hunting days account for 55% of total guided days;
- Average revenues add to $1,073 per hunting day or more than twice the average rate of $440 per day for non-hunting days (excludes retail trade and other non-operating revenues).

The table also provides estimates for the Morice LRMP Area assuming that the Morice region accounts for 11.5% of the Skeena Region guide outfitting sector. This information is more up-to-date than the Base Case data, but as shown on the table, the socio-economic impact estimates based on the Skeena data are comparable to the Base Case data.

Table 43 Economic Parameters of Guide Outfitting in the Morice LRMP Area

Per Annum	Skeena		Morice LRMP Area	Morice as a % of Skeena	Base Case-4 WMUs	Adjusted for Morice
Number of Guide Outfitters	45	outfitters	9		13	
Hunting Clients	1,152	hunters	174	15.10%	406	154
Non-Hunting Clients	2,343	clients				
• Hunting Days	10,625	days				
• Non-Hunting Days	8,662	days				
Total Days	19,287	days				
Hunting Days (Double-Counting by Species)	12,895	days	1,026	7.96%	2,902	1,103
Hunting Days per Client	11	days	5.9		7.1	7.1
Morice LRMP area as a %				11.53%	38%	
Revenues:						
Hunting Revenues	$11.4	million	$1,314,770	11.53%		
Freshwater Fishing	$1.4		$158,319			
Guest Ranch/Trail Riding/Wildlife Viewing	$0.9		$101,580			
Other Sports and Recreation	$1.5		$168,915			
Other Retail & Non-Operating Revenues	$0.6		$64,868			
Total Revenues	$15.7	million	$1,808,451	11.53%	$2,755,000	$1,046,900
Wages and Salaries	$6.0	million	$694,108	11.53%		
Person Years of Employment	183	PYs	21	11.53%	52.5	20.0
Government Revenues					$203,000	$77,140
Gross Domestic Product					$1.70	$0.64
Net Economic Value (note 2)	$1.41	million	$163,062	11.53%		
Net Economic Value Per WLAP			$222,677			

Notes:

1. Government revenues include Guide and Assistant Guide Fees, Guide Royalties, Client Hunting Licences, Client Hunting Tags, Land Tenure, Park Use, Water Licences, Grazing Licences and Property Taxes. Income Taxes are not included.
2. Net Economic Value is calculated as Government Revenues plus 5% of wages, salaries and gratuities (assumed economic rent to labour) plus 5% of Total Revenues (assumed economic rent to capital). This estimate of net economic value is consistent with the economic value associated with non-resident hunting from WLAP. An estimate of consumer surplus to the hunters is not included as the hunters are not residents of BC.

Source:

1. Skeena region: Pacific Analytics Inc., *B.C. Guide Outfitting Industry, Exhibit 1:Common-Format Financial Statement by Region - 2002, Draft Results*, January 30, 2004.
2. Morice LRMP area statistics: Based on data from Ministry of Water, Land and Air Protection (WLAP), 1990 to 2002; and Skeena region data.

Guide outfitting territory tenures confer upon the licensee exclusive use of a territory for guided hunting operations (but not for recreation or other commercial uses of the land). The exclusive nature of these tenures, coupled with the requirement that non-resident hunters must use the services of a licensed guide, has generated economic rent that is capitalized in the value of these transferable tenures. Recent sales of these tenures have indicated values for the licenses of up to $1 million in some parts of B.C. (exclusive of hard assets such as lodges, cabins and equipment).

Appendix 5-3 Guided Angling

As indicated in the Base Case SEA, the Morice LRMP area includes provincially significant salmon, trout and steelhead fishing operations, with many rivers including the Morice River and Bulkley River offering world class fishing, particularly for steelhead. Lake fishing is also popular. In particular, fishing on Babine Lake, and along the Babine River just north of the Morice LRMP area is also world renowned.

In 1998/1999, there were 19 guides operating on the major rivers and lakes in the Morice Area, and an additional 7 angling guides that operate over the length of the Bulkley River. A total of 2,978 guided days are granted to these operators. In addition, an estimated 15% of guided angler days granted for fishing along the Bulkley River likely occur within the Morice LRMP area (estimated between 140 guided angler days (1998 level) and the maximum allowed of 225 guided angler days).[92]

Table 44 Guided Days Granted in Morice LRMP Area

Guided Days Granted in Morice LRMP Area	Number of Guides Granted Rod Days	Number of Days Granted Each Year
Morice River	3	433
Nanika River	3	260
Nadina River	1	50
Babine Lake	14	1,595
Morice Lake	7	480
Nanika Lake	4	95
Kidprice Lake	3	65
Guided Days Granted in Morice LRMP Area		2,978
Total B.C. Guided Angler Days		63,600
Morice LRMP Area as a % of Total for B.C.		4.7%

Note: Excludes guided days granted on the Bulkley River.
Source: Morice LRMP area data: Horn, Hannah and Gregory C. Tamblyn, *Morice Planning Area Background Report;* Total for B.C.: Department of Fisheries and Oceans and B.C. Ministry of Water, Land and Air Protection, *2000 Survey of Sport Fishing in British Columbia*, 2003.

The following table summarizes key socio-economic statistics on guided angling in the Morice LRMP area. The socio-economic impact data are based on the analysis presented in the Morice LRMP Base Case SEA.

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[92] The number of guided angler days on the Bulkley River ranges between the 1998 level of 931 guided angler days to the maximum allowed of 1,504 guided days: MWLAP, *Angling Use Plan – Bulkley River*, 1998; the percentage of Bulkley River anglers that fish in the Morice LRMP area are estimated by Pacific Analytics in: *Morice LRMP Base Case Socio-Economic Assessment*, page 67.

Table 45 Socio-Economic Impacts of Guided Angling and Associated Services

Estimated Economic Impacts of Guided Angling in Morice LRMP Area	2001 Estimates
Guided Angling Days Granted in Morice	2,978angling days
Estimated Revenues per Angling Day (1)	$770.31
Total Estimated Revenues to Angling Guides	$2.294million
Total Wages and Salaries	$0.545million
Total GDP (Value Added)	$0.939million
Total Direct Government Revenues	$0.086million
Total Direct Estimated FTEs	12.8FTEs

Note: (1) Based on high-end fishing lodges located on the Babine River and includes associated services/ spending on lodging, food, fuel, and other expenses.
Source: Pacific Analytics et al., *Morice LRMP Base Case Socio-Economic Assessment*, pages 66 & 67.

This analysis estimates total revenues from guided angling using the number of guided angling days granted in the Morice LRMP area and average revenues of $770 per angling day to the fishing lodge operation. Since the average revenue of $770 per angling day is based on estimates for three high-end fishing lodges on the Babine River and includes guiding fees, accommodation, food and other associated services, the analysis in the table below includes the impacts associated with providing lodging and services other than guiding to the clients. The table shows that guided angling in the Morice LRMP area generated some $2.3 million in revenues to guiding businesses and associated services in the region.

By comparison, for 2000, DFO reported that expenditures from all freshwater angling in B.C. on guiding services were $4.8 million and that expenditures on fishing touring packages were another $21 million (or combined expenditures of $405 per guided angler day based on 63,600 guided angling days).[93]

The following table estimates the Net Economic Value from guided angling based on the above data.

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[93] Source: Department of Fisheries and Oceans and B.C. Ministry of Water, Land and Air Protection, *2000 Survey of Sport Fishing in British Columbia*, 2003.

Table 46 Net Economic Value from Guided Angling and Associated Services

Net Economic Value from Guided Angling and Associated Services in Morice LRMP area	2001 Estimates
5% of Industry revenues	$114,699
5% of Wages and Salaries	$27,264
Direct Government Revenues – clients	$24,817
Direct Government Revenues – guides	$23,140
Total	$189,920

Notes:

1. Wages and salaries are based on $42,600 per FTE, based on: Pacific Analytics Inc., *The North Coast Multi-Day Nature Based Tourism Industry: An Economic Profile*, prepared for the North Coast Backcountry Caucus, July 2003.
2. Direct Government Revenues from clients assume 6 angling days per client (Pacific Analytics Inc. et al., Morice LRMP Base Case SEA) and average license fees of $50 per client (The licence fees vary depending on the number of fishing days, but the 8-day charge of $30 for non-Canadians is applied to all clients. Also, $20 per client is added to recognize that some clients would pay the Classified Waters license fee of $10 per day for non-residents of B.C. and/or the $40 surcharge for steelhead).
3. Direct government revenues from guide licenses are estimated at $890 per operation to account for various licenses for the guides. Fishing license data are from: GSGislason & Associates Ltd., *Freshwater Angling in B.C. – An Economic Profile*, 2003.

Appendix 5-4 Other Adventure Travel

There are another 5 or 6 other commercial operations (excluding guide-outfitters and guided angling businesses) that offer backcountry multi-day tours in the Morice LRMP area. This may include backcountry skiing, snowmobiling tours, canoeing/kayaking tours and hiking tours. [94]

There are no heli-skiing or heli-hiking operators that offer tours in the Morice LRMP area.

The following table summarizes the economic impacts from these 5 or 6 back-country operators.

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[94] The Morice LRMP Base Case estimates that there are 10 "other" commercial tourism operators, but these include 4 front-country operations and 6 backcountry operations (Source: Pacific Analytics and al., *Morice LRMP Base Case Socio-Economic Assessment*, page 66). A brief review of the list of tourism operators prepared as part of the Tourism Opportunity Study identified 5 backcountry tour operators, excluding guide outfitters and fishing guides.

Table 47 Key Socio-Economic Impacts for Other Backcountry Tourism Operators

Economic Impacts from Other Backcountry Tourism Operators in Morice LRMP Area	2003 Estimates - Backcountry & Front-Country	2003 Estimates - Backcountry Only
Front-Country Operations	4	
Backcountry Operations	6	6
Number of Operations	10	6
Direct Full Time Employment (FTEs)	15	9
Total Revenues	$1,044,000	$626,400
Total Wages and Salaries	$439,000	$263,400
Total GDP (Value Added)	$626,000	$375,600

Note: Wages and salaries may be understated as these represent the WCB total assessed payroll.
Source: Personal communication with Jim Johnson, Pacific Analytics, March 12, 2004 (restated data); also, Pacific Analytics et al., *Morice LRMP Base Case Socio-Economic Assessment*, page 67.

The following table provides a very rough estimate of the annual Net Economic Value from adventure travel commercial operators in the Morice LRMP area (excluding guide-outfitting and guided angling operators).

Table 48 Net Economic Value from Other Adventure Operators in the Morice LRMP Area

Net Economic Value from 5 or 6 Other Adventure Tourism	
5% of Industry revenues	$31,320
5% of Wages and Salaries	$13,170
Direct Government Revenues	$9,000
Total	$53,490

Notes:
Government fees and permits can range from $500 to up to $3,000 for larger adventure tourism operations; (the above assumes $1,500 per operator excluding lodge operations).

APPENDIX 6 RECREATION SECTOR

The Morice LRMP area provides residents and visitors with a wide range of outdoor recreation opportunities. This is well documented in various reports including the *Morice Planning Area Background Report*[95] and the *Morice LRMP Base Case Socio-Economic Assessment*.[96] Some of the key recreational activities include resident hunting, sportsfishing, backcountry summer activities, snowmobiling, ski touring and other winter activities. These are summarized in the following section, and described in more detail in the subsequent sub-sections.

Appendix 6-1 Overview of Recreation Activities

There is limited information on the level of recreation activity in the Morice LRMP area, but there are various studies that have attempted to assess the degree of impacts from recreation including:

- Level of expenditures by participants; and
- The net economic value, which represents the participants' willingness to pay over and above the level of expenditures.

The following table summarizes the key recreation activities occurring in the Morice LRMP area and where available, provides data on level of activity, direct expenditures and net economic value. There are various estimates of net economic value for various outdoor activities, ranging between estimates of $8 and $15 per day to well over $50 per day. The following table summarizes various estimates of daily net economic values for resident hunting, resident angling, wildlife viewing and other outdoor activities.

Table 49 Summary of Impacts from Recreation Activities in the Morice LRMP Area

Activity Type	Annual Level of Activity in Morice LRMP Area	Expenditures per Day	Net Economic Value per Day
Resident Hunting	• B.C. residents hunt between 10,000 days and 16,500 hunter days in Morice LRMP area. • This is approximately 10 times the hunting effort by non-residents, although the data are not directly comparable due to the double-counting of individuals hunting for numerous species at a time. • The WLAP data show that B.C. residents kill almost 7 times more large mammals than non-residents.	$50 (EC-1996) $123 (ORC- 2003)	$17.90/day (EC- 1996) and $55/day (MELP-1998)
Resident Angling	• The Morice LRMP area provides an estimated 52,500 angling days for B.C. residents. Of these, 7,500 angling days target steelhead and 45,000 angling days are focused on other freshwater fisheries. • By comparison, there are approximately 3,000 guided angler days allocated to the Morice LRMP area.	$29 (EC – 1996) $31 (ORC– 2003)	$12.2 (EC-1996)

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[95] Horn, Hannah and Gregory C. Tamblyn, *Morice Planning Area Background Report*, pages 63 to 69.

[96] Pacific Analytics Inc., *Morice LRMP Base Case Socio-Economic Assessment*, pages 58 to 72.

Activity Type	Annual Level of Activity in Morice LRMP Area	Expenditures per Day	Net Economic Value per Day
Wildlife Viewing	• Usually combined with other activities	$5 (ORC-2003) $18 (EC-1996) $22 (MELP-1998)	$7.6 (EC-1996) and $44/day (MELP-1998)
Other Outdoor Activities in Natural Areas	• Includes motorized activities such as snowmobiling and ATVs, as well as non-motorized activities such as horseback riding, cross-country skiing, hiking and bicycling. • Snowmobile activities are estimated at 12,000 recreation/visitor days per year in the Morice LRMP area. • Expenditures for snowmobiling participants can range between $85 and $225 per day for overnight visitors; locals might spend $50 per day (ORC-2003)	$45 (EC-1996) Depends on activities: $10 (locals hiking) to $60 (locals ATV) (ORC-2003)	$8.2 (EC-1996)
Camping	• 165 camping units at the Forest Service recreation sites & Red Bluff Provincial Park • Estimated 20,000 camping visits per year (some of these impacts, however, may already be included in hunting & angling impacts)		$33 per day (WLAP-2001)
Total	• Estimated at between 94,500 to 100,000 recreation days		$10 to $20 (EC-1996), $50 range (MELP-1996)

Source:

1. Expenditures and net economic value: Environment Canada (EC), *The Importance of Nature to Canadians: The Economic Significance of Nature Related Activities in 1996*, www.ec.gc.ca, web site accessed February 2004.
2. Net Economic Value: Reid, Roger, *Economic Value of Wildlife Activities in British Columbia, 1996*, BC Ministry of Environment, Lands and Parks (MELP), Victoria, 1998 (Tables 21(page 3) & 23 (page 26)); B.C. Environment, *B.C. Resident Hunter Survey, 1995*; B.C. Ministry of Water, Land and Air Protection (WLAP), *Economic Benefits of B.C.'s Provincial Parks*, 2001.
3. The Economic Planning Group et al., *Economic Impact Analysis of Outdoor Recreation on British Columbia's Central Coast, North Coast and Queen Charlotte Islands/Haida Gwaii*, Outdoor Recreation Council (ORC) of British Columbia, 2003, page 102.

Appendix 6-2 Resident Hunting

The B.C. Ministry of Water Land and Air Protection (MWLAP) provided hunting effort data between 1990 and 2002 for each Wildlife Management Unit (WMU) overlapping the Morice LRMP Area. The following data summarize the information for the Morice LRMP area as well as total estimated economic value estimated by MWLAP.

Table 50 Summary Data on Hunting Effort in the Morice LRMP Area

Annual Averages, 1990-2002	Total Morice LRMP Area		
	Resident	Non-Res.	Total
Kills	609	90	699
Hunters	2,638	174	2,812
Hunter Days	16,491	1,026	17,517
Net Economic Value $	$906,281	$222,677	$1,128,958
Net Economic Value $ Per Day	$55	$217	$64

Notes: Does not add due to rounding.

1. Includes only big game hunting effort (black bear, cougar, elk, moose, mule deer, white tailed deer, mountain sheep).
2. Regional annual data can vary widely and the data were averaged for the years 1990 to 2002.
3. The Morice LRMP area data are estimated to represent approximately 38% of the hunting effort for all 4 WMUs overlapping the Morice LRMP area.
4. Total hunter days and associated net economic values include some double counting as individuals hunt in more than one MU, and hunt for more than one species at a time. Total economic values are estimated in $1999 by MWLAP based on: BC Environment, *1995 B.C. Resident Hunter Survey*.

Source: B.C. Ministry of Water, Land and Air Protection, Wildlife Branch. The tables at the end of this section provide more detail.

The above data for the Morice LRMP area are estimated by totalling the number of hunters and hunter days by management units (M.U.) and for all major mammal species. According to WLAP, this results in some double counting of individuals who hunt in more than one M.U. This is less of a concern when data are reported on a provincial and regional basis as the totals eliminate some of the double counting.

The extent to which the number of resident hunters and hunter days for the Morice LRMP area double-counted hunters who hunt in more than one management unit may be estimated by comparing the percent of kills that occurs in the Morice LRMP area (18% of all kills in the Skeena region for which there is no double-counting) with the percent of hunter days and resident hunters where double counting occurs (32% of hunters and hunter days in Skeena region); 18% of the Skeena effort would yield approximately 10,000 hunter days and 1,500 hunters.

The following table summarizes the level of effort data for the Skeena region, B.C. and the Morice LRMP area.

Table 51 Level of Hunting Effort by B.C. Residents in the Skeena Region and B.C.

Level of Hunting Effort by BC Residents	Skeena Region	B.C.	Skeena as a % of BC	Morice LRMP Area		
				Effort (with double counting)	% of Skeena	% of B.C.
Number of B.C. Resident Hunters	8,214	123,773	7%	2,638	32%	2.1%
Hunter Days	52,280	939,944	6%	16,491	32%	1.8%
Big Game Harvest	3,328	37,479	9%	609	18%	1.6%
Area (Million Hectares)	27.4	94.7	29%	1.5	5%	1.6%

Source: Based on WLAP Resident Survey Statistics as reported in: GSGislason & Associates Ltd., *Resident Hunting in B.C. - An Economic Profile*, MSRM, 2003.

The B.C. MWLAP data show that on average, there are 2,638 resident hunters per year who visit the Morice LRMP area, and that each hunts an average of approximately 6.25 days in the area for a total of 16,491 hunter days a year. Total hunter days are inflated through double counting when summed across species and management units, and a more accurate reflection of the number of hunter days may be 10,000 days. This level of effort is approximately 10 times the level of hunting effort of non-B.C. resident hunters who visit the Morice LRMP area each year.

The B.C. MWLAP estimates the net economic value per year associated with the hunting effort in the Morice LRMP area at $0.9 million for B.C. resident hunters (with the double-counting of hunters and hunter days in different M.U.). This estimate uses a contingent valuation method in conjunction with a survey of actual expenditures to determine the total economic value associated with resident hunting activities.

The following tables provide more detail on the level of hunting effort for all 4 WMUs overlapping the Morice LRMP area as well as estimates for just the Morice LRMP area.

Table 52 Level of Hunting Effort in the Morice LRMP Area

		Total All Species - All 4 Wildlife Management Units Overlapping Morice LRMP Area				Total All Species - Estimate for Morice LRMP Area			
		Animals Killed	Number of Hunters	Hunter Days	Net Econ. Value	Animals Killed	Number of Hunters	Hunter Days	Net Econ. Value
MU 6-4	R	500	2,020	13,410	728,516	200	808	5,364	291,406
	N	60	137	876	189,417	24	55	350	75,767
	Total	560	2,158	14,286	917,933	224	863	5,714	367,173
MU 6-8	R	370	1,602	9,442	522,419	148	641	3,777	208,968
	N	91	150	857	186,569	36	60	343	74,628
	Total	461	1,752	10,299	708,988	185	701	4,120	283,595
MU 6-9	R	494	2,292	14,089	783,969	247	1,146	7,045	391,985
	N	55	110	616	130,785	27	55	308	65,393
	Total	549	2,403	14,706	914,754	274	1,201	7,353	457,377
MU 7-27	R	95	287	2,037	92,817	14	43	306	13,923
	N	11	26	164	45,934	2	4	25	6,890
	Total	106	313	2,201	138,751	16	47	330	20,813
Total	R	1,459	6,202	38,979	2,127,721	609	2,638	16,491	906,281
	N	217	423	2,513	552,705	90	174	1,026	222,677
	Total	1,676	6,626	41,492	2,680,426	699	2,812	17,517	1,128,958

Notes:

R: Resident; N: Non-Resident

1. Estimates of Morice LRMP area are calculated as 40% of the WMU 6-4, 40% of the WMU 6-8, 50% of the WMU 6-9 and 15% of the WMU 7-27.
2. For resident hunters, the 'Net Economic Value' represents the value of hunting to hunters over and above the costs incurred by hunters ($1999) - i.e. consumer surplus.

Source:

Ministry of Water, Land and Air Protection - Wildlife Branch, *Summary Statistics Data Base, Hunter Harvest and Effort* and *Big Game Hunting Statistics for the 2001/02 Season.*

Table 53 Hunting Effort and Value in WMUs 6-4,6-8,6-9 and 7-27 for Selected Species*
Annual Averages 1990 - 2002

		White Tailed Deer				Mule Deer				Black Bear				Grizzly Bear			
		Animals Killed	Number of Hunters	Hunter Days	Net Econ. Value	Animals Killed	Number of Hunters	Hunter Days	Net Econ Value	Animals Killed	Number of Hunters	Hunter Days	Net Econ Value	Animals Killed	Number of Hunters	Hunter Days	Net Econ Value
MU 6-4	R	5	66	500	23,605	155	756	4,996	218,815	41	134	902	61,957	1	9	73	5,914
	N					0				26	45	284	55,365	0	2	16	4,074
	Total	5	66	500	23,605	155	756	4,996	218,815	68	179	1,186	117,322	2	11	90	9,988
MU 6-8	R	1	34	218	10,30	85	542	3,419	149,762	37	118	661	45,432	2	12	69	6,434
	N									29	37	222	43,290	0	3	21	5,194
	Total	1	34	218	10,304	85	542	3,419	149,762	66	155	883	88,722	2	14	90	11,628
MU 6-9	R	2	44	358	16,893	86	703	4,503	197,221	68	200	1,326	91,090	4	25	185	14,905
	N									25	36	198	38,685	1	3	26	6,487
	Total	2	44	358	16,893	86	703	4,503	197,221	92	235	1,524	129,775	5	28	211	21,392
MU 7-27	R									7	19	150	6,030	0	4	31	4,323
	N									5	7	48	13,041	0	1	9	2,400
	Total	0	0	0	0	0	0	0	0	12	26	198	19,071	1	5	40	6,723
Total	R	8	145	1,076	50,802	325	2,000	12,918	565,798	153	471	3,039	204,509	8	50	359	31,576
	N	0	0	0	0	0	0	0	0	85	125	752	150,381	2	9	72	18,155
	Total	8	145	1,076	50,802	326	2,000	12,918	565,798	238	595	3,792	354,890	10	58	430	49,731

		Goat				Moose				Wolf				Total All Species			
		Animals Killed	Number of Hunters	Hunter Days	Net Econ. Value	Animals Killed	Number of Hunters	Hunter Days	Net Econ Value	Animals Killed	Number of Hunters	Hunter Days	Net Econ Value	Animals Killed	Number of Hunters	Hunter Days	Net Econ Value
MU 6-4	R	4	17	65	4,671	274	969	6,228	413,554	19	70	646	0	500	2,020	13,410	728,516
	N	2	2	8	2,526	31	62	370	69,901	1	26	198	57,551	60	137	876	189,417
	Total	6	19	73	7,197	305	1,031	6,598	483,455	20	96	843	57,551	560	2,158	14,286	917,933
MU 6-8	R	14	36	110	7,953	220	806	4,556	302,534	12	54	408	0	370	1,602	9,442	522,419
	N	6	9	37	11,154	55	78	402	76,051	2	24	175	50,880	91	150	857	186,569
	Total	19	45	147	19,107	274	884	4,958	378,585	14	78	583	50,880	461	1,752	10,299	708,988
MU 6-9	R	29	85	294	21,243	283	1,151	6,666	442,617	22	85	757	0	494	2,292	14,089	783,969
	N	5	9	42	12,862	24	54	285	53,836	0	9	65	18,915	55	110	616	130,785
	Total	34	93	337	34,105	307	1,205	6,951	496,453	22	95	822	18,915	549	2,403	14,706	914,754
MU 7-27	R	2	7	22	1,874	83	246	1,760	80,590	2	12	74	0	95	287	2,037	92,817
	N	2	3	15	6,865	4	8	46	10,035	0	7	46	13,593	11	26	164	45,934
	Total	4	10	38	8,739	87	254	1,805	90,625	2	19	120	13,593	106	313	2,201	138,751
Total	R	49	144	491	35,741	860	3,172	19,210	1,239,295	55	221	1,885	0	1,459	6,202	38,979	2,127,721
	N	14	22	103	33,407	114	202	1,103	209,823	3	66	484	140,939	217	423	2,513	552,705
	Total	63	166	594	69,148	974	3,374	20,312	1,449,118	58	287	2,369	140,939	1,676	6,626	41,492	2,680,426

* These management units cover an area of 3.9 million hectares compared to the 1.5 million hectares for the Morice LRMP area.
Source: Ministry of Water, Land and Air Protection - Wildlife Branch, *Summary Statistics Data Base, Hunter Harvest and Effort*.

Appendix 6-3 Resident Angling

Freshwater angling plays an important role in the Morice LRMP area. This appendix summarizes data available from the Morice LRMP Base Case SEA and other sources on angling effort and average data on expenditures by anglers, FTEs and net economic value (also referred to as consumer surplus or "willingness to pay".[97]

The following table provides key statistics on the level of angling effort in the Morice LRMP area. Highlights from the data include:

- Guided days represent approximately 10% of total angling effort on the Bulkley and Morice rivers.
- The Skeena region is very provincially significant for steelhead angling, accounting for some 33% of all Steelhead angling effort in B.C. (2001/2002 season).
- The Skeena region accounts for 348,000 freshwater angling days, or approximately 8% of B.C.'s total freshwater angling effort.
- The Morice LRMP area steelhead fishery accounts for an estimated 7,450 angler days, or 15% of the steelhead fishery in the Skeena region. (By comparison, the Morice LRMP area covers approximately 1.5 million hectares of the 27.4 million hectares (5.5 %) of the Skeena region).[98]
- The Morice LRMP area generates an estimated 50,000 freshwater angling days, assuming that the Morice LRMP area accounts for 15% of all Skeena region freshwater fishing angling effort (or the same percentage as the Steelhead fishery). This represents approximately 1% of freshwater angling effort in B.C.
- The Morice LRMP area accounts for approximately 5% of guided angling days in B.C.

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[97] Reid, Roger, *Economic Value of Wildlife Activities in British Columbia, 1996*, BC Ministry of Environment, Lands and Parks, Victoria, 1998.

[98] The area for the Skeena region is based on data from the Ministry of WLAP for each WMU. Based on that information, B.C. covers 96.8 million hectares.

Table 54 Angling Effort in Morice LRMP Area and Skeena Region

B.C. Steelhead Angler Survey	Anglers	Angling Days	Guided Days	Guided as a % of Total
Bulkley River	2,354	13,969	1,504	11%
Morice River	1,059	5,364	433	8%
Bulkley & Morice in LRMP Plan Area (Note 1)	1,412	7,459	659	9%
Steelhead Anglers (2001/2002):				
Skeena Region	8,862	51,600		
Total B.C.	23,141	155,000		
Skeena as a % of B.C.	38%	33%		
Bulkley & Morice in LRMP Area as a % of Skeena	16%	14%		
Freshwater Angling Survey (2000) - Including Steelhead and Other Fisheries	Anglers	Angling Days	Guided Days	Guided as a % of Total
Freshwater Angling in B.C.	303,700	4,402,000	63,600	1%
Freshwater Angling in Skeena		348,000		
Freshwater Angling in Morice LRMP Area (note 2)		50,307	2,978	
Morice LRMP Area as a Percentage of B.C. Total		1.1%	4.7%	

Notes:

1. This assumes that 15% of Bulkley angler days occur in the Morice LRMP Area.
2. Estimated based on 15% of Skeena region effort.

Source:

1. Number of anglers & angler days: WLAP, Survey of Steelhead Anglers, as reported in Pacific Analytics Inc., *Morice LRMP Base Case Socio-Economic Assessment*, 2004.
2. Guided Days in Bulkley: B.C. Ministry of Water, Land and Air Protection, *Angling Use Plan, Bulkley River*, December 1998 (assumes that all guided days are allocated).
3. Skeena and B.C. data: various WLAP surveys as reported in: GSGislason & Associates Ltd., *Freshwater Angling in B.C. - An Economic Profile*, MSRM, 2003.

Some of the freshwater angling in the Morice LRMP is by B.C. residents who do not reside in the Morice LRMP, but are not part of the guided-angling days in the tourism section. The Morice LRMP Base Case SEA estimates the impacts associated with the 7,460 angling days for the steelhead fishery in the Morice LRMP area ($64 per non-local angling day in expenditures, 4.4 FTEs of direct employment and $238,000 in direct expenditures). The impacts of non-guided angling for all freshwater fisheries in the Morice LRMP area are likely much greater.

Table 55 Economic Impacts of Non-Local Commercial Angling in Morice LRMP Area

Economic Impacts	Steelhead Fishery in Morice LRMP Area	All Freshwater Fishery in Morice LRMP Area
Angler Days (Local & Non-Local)	7,459	50,307
Non-Local Angler Days (half)	3,730	
Tourist Expenditures	$238,000	
Expenditures per non-Local Angler Day	$64 per day	
GDP	$130,000	
Direct Employment FTEs	4.4 direct FTEs	

Source:

1. Steelhead fishery in Morice LRMP area: *Morice LRMP Base Case SEA*, page 68.
2. The number of angler days for all freshwater fisheries in the Morice LRMP area is estimated from the previous table.

Environment Canada estimates average daily expenditures associated with recreational fishing in B.C. to $29 per angling day, and assesses the net economic value at $12 per day per participant.[99]

Appendix 6-4 Other Outdoor Recreation in the Morice LRMP Area

The Morice LRMP area has a few small provincial parks within its boundaries. Two are day use parks, Andrews Bay and Topley Landing and two offer campground facilities, Babine Lake Marine (37 hectares) and Red Bluff (148 hectares). As shown following, the number of parties per site ranges between 20 and 54 parties per site or an average of 37 parties per site and 120 visits per year assuming 3.2 visits per camping party.

Table 56 Visits to Parks in and Near the Morice LRMP Area

	Number of Camping Sites	Number of Parties - Day Use	Number of Parties Camping	Approx. Visits	Number of Parties per Site
Babine Lake Marine	20	1,392	N/A	N/A	N/A
Babine Mountains	N/A	1,475	151	5,646	N/A
Red Bluff	27	6,135	531	23,172	20
Tyhee Lake	59	14,874	3,167	62,193	54

Note: The Number of visits is based on the following: 3.5 visitors per party for day use and 3.2 visitors per party for Camping Use.
Source: BC Parks, 2000 Provincial Park Attendance in Parties, 2000; (wlapwww.gov.bc.ca/bcparks, February 2004).

Most recreation activities in the Morice LRMP area occur within the provincial forests. This is not unlike other regions in B.C.:

- In 1993, BC Parks estimated that recreational visits in provincial forests (52 million visits) exceed the number of recreational visits to parks and recreation areas in B.C. (36 million visits).
- Two thirds of all recreational visits to B.C.'s provincial forests are in roaded areas and the other third are in unroaded areas (backcountry).

The following tables summarize the B.C. estimates for recreation activities in provincial parks, recreation areas and provincial forests. Provincial forests include all crown forests, which are outside areas that are designated as Provincial Parks and Recreation Areas.

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[99] Source: Environment Canada, *The Importance of Nature to Canadians: The Economic Significance of Nature Related Activities in 1996.*

Table 57 1993 Estimates of Recreation Visits to B.C. Parks and Provincial Forests

	Millions of Visitor Days			
	Residents	Non-Residents	Total	% of Total
Provincial Parks & Rec. Areas	17.8	4.9	22.7	
Regional Parks & Rec. Areas	6.0	0.0	6.0	
National Parks	3.6	3.7	7.3	
Sub-Total Parks & Rec. Areas	27.4	8.6	36.0	41%
Provincial Forests	45.0	7.0	52.0	59%
Total	72.4	15.6	88.0	100%
Visits to Provincial Forests:				
Roaded Areas			34.4	66%
Unroaded Areas			17.6	34%
Total			52.0	100%

Source: Ministry of Forests, *Forest, Range & Recreation Resource Analysis*, 1994, pages 180 to 184.

Provincial forests do not have the same camping and road accessed facilities as Provincial Parks. The Ministry of Forests, however, supports recreation camping sites and recreation trails. The *Morice Planning Area Background Report* reports that the Morice LRMP area includes 25 Forest Service Recreation Sites, with 22 of these sites providing 138 camping units. All MOF recreation sites are used for either boating, swimming, fishing or/and hunting.

Table 58 Crown Land Recreation Sites and Camping Units in Morice LRMP Area

Use	List of Sites	Number of Sites	Number of Camping Units
Primarily used for boating & fishing	Owen Lake, Owen Flats A, Sunset Lake, Old Fort, Tanglechain Lake, Doris Lake, Noralee East & West, Eastern Lake	9	
Primarily used for hunting	Owen Flats B, Twinkle Lake, Sweeney Lake East & West, Helen Lake	5	
Used for fishing, hunting, boating & other	Aspen, Lamprey Creek, Morice Lake, Nadina Lake, Poplar Lake, Parrott Lake, Paul Lake, Bear Island	8	
Sub-Total – Recreation Sites		22	138
Red Bluff Provincial Park			27
Total			165

Source: Horn, Hannah and Gregory C. Tamblyn, *Morice Planning Area Background Report*, pages 64 & 65.

Assuming that MOF camping sites have the same degree of visitation as the nearby provincial campgrounds, results in an estimated 20,000 annual visits (average of 120 visits per year based on visitation rates to the Red Bluff and Tyhee Lake campground).

The Morice Planning Area Background Report describes 5 recreation trails. These include:

- The L.D. Byman Trail and Bear Island Viewpoint Trail, each approximately 500 metres in length.
- Trails within Granisle and Houston community forests, which include some 40 km of cross

country ski trails on Morice Mountain (near Houston).

- The Nanika-Kidprice Portage trails: these consist of three short portage trails linking a series of lakes; this area is being proposed as a Protected Area as part of the Morice LRMP.
- The Grease Trail which is a non-motorized trail between Fort Babine and Talkla Lake that is being restored as a joint project between Houston Forest Products and the Fort Babine Band. The Morice LRMP provides a No Timber Harvesting buffer along the trail to protect its recreation and cultural heritage values.

Provincial forests offer the same activities that are offered in parks and recreation areas such as hiking, fishing, cross country skiing and other non-motorized activities. In addition, however, provincial forests offer backcountry activities that are not always, and sometimes not at all, permitted in Provincial Parks and Recreation Areas.

Snowmobiling

Snowmobiling is a very popular activity in Morice LRMP area provincial forests. There are no recent direct data on snowmobiling participation rates for B.C. residents, but in 1994, the Ministry of Forests Range and Recreation Resource Analysis reported snowmobiling participation rates of approximately 4% for Lower Mainland residents and 7% for all of B.C.[100] The local Houston snowmobile club estimates that the Morice LRMP area attracts approximately 12,000 snowmobile visitors per year as follows:

Table 59 Snowmobile Activity in the Morice LRMP Area

Snowmobile Areas	Estimated Number of Visitors Per Year
Telkwa Range	5,000
Dungate Area	2,250
Sibola Range	2,250
Topley-Granisle Trail Network	1,250
Other Local Trails	1,250
	12,000

Note: Assuming that there are approximately 60 week-end/holiday snowmobile days, this would translate to approximately 200 visitors per week-end/ holiday day.
Source: Personal communication, Les Auston, Houston Snowmobile Club, January 2004.

Snowmobiling is an important tourism draw for the B.C. Interior. Estimates of expenditures by snowmobiling tourists range between $85 and $225 per day. The higher estimate of $225 per day is based on a Snowmobile Strategy[101] conducted for the City of Revelstoke and it included only snowmobile tourists who stayed overnight. Average daily expenditures by visitors were: accommodation and meals $88 (39%), snowmobile costs $53 (24%), entertainment $50 (22%) and miscellaneous $33 (15%), for a total of $224 per non-resident day.

The Morice Tourism Opportunity Study identifies snowmobiling as perhaps the fastest growing outdoor activity in the region. The main constraints to growth are distance from major regional markets and the lack of service infrastructure.[102]

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[100] B.C. Ministry of Forests, *1994 Forest, Range & Recreation Resource Analysis*, 1994.

[101] City of Revelstoke, *Revelstoke Snowmobile Strategy*, 2002, www.cityofrevelstoke.com/edc/snowmobile.

[102] Office of the Wet'suwet'en et al., *Morice Forest District Tourism Opportunity Study*, 2002, page 210.

Off Road Motorized Recreation Activities

Off-road motorized recreation activities include 4X4 backcountry driving, All terrain Vehicles (ATVs) and motorcycles/motorcross. The Morice LRMP area has an extensive network of logging roads that serve as backcountry trails for ATVs and motorcycles/motorcross. There may be opportunities to link these types of tours with cultural heritage tours. There are no estimates of off road motorized recreation activities in the Morice LRMP area.

Canoeing and Kayaking

The Morice LRMP area offers opportunities for canoeing and kayaking at many of the lakes and recreation sites in the planning area. The Nanika-Kidprice chain of lakes has some potential to develop as a significant tourist attraction. The local guide outfitter has cabins on both the Nanika and Kidprice lakes. Although this is the most popular canoe route, current use is quite low.[103]

Horseback Riding

Horseback riding is limited to major trails in many B.C. parks and recreation areas. By comparison, horseback riding in provincial forests is allowed on all major recreation trails. In the Morice LRMP area, there are two guide-outfitters that offer non-motorized wilderness hunting experiences.[104]

Ski-Touring/ Hiking/ Hut to Hut/ Other Non-Motorized

Ski touring, hiking and hut-to-hut activities have been growing in popularity in B.C. The Morice Tourism Opportunity Study identifies ski touring, hiking and hut-to-hut activities as potential opportunities for the region, but also identifies the challenge of competing with well developed hut to hut systems in Canada's parks that provide public access to backcountry huts at little or no cost. [105] Other activities that occur in the Morice LRMP area include ice-fishing, dog sledding and snow shoeing. Bicycling is a non-motorized activity that is not permitted in many areas of Provincial Parks and Recreation Areas.

Activities Offered by Provincial Parks and Recreation Areas In and Near Morice LRMP Area

The following table summarizes the activities offered by each Provincial Park and Recreation Area in or near the Morice LRMP area. As noted on the table, most Provincial Parks in the vicinity of the plan area allow boating, fishing, hiking and non-motorized winter activities such as ski touring. Provincial Parks also sometimes allow some restricted access to horseback riding and bicycling. Snowmobiles are usually not permitted in Provincial Parks except on some trails. Hunting is sometimes permitted.

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[103] Ibid, page 268.

[104] B.C. MSRM, Morice LRMP Working Draft, Version 2.14.

[105] Office of the Wet'suwet'en et al., *Morice Forest District Tourism Opportunity Study*, 2002, page 211.

Table 60 B.C. Parks and Recreation Areas in or Near the Morice LRMP Area

Parks in or Near Morice LRMP (parks are outside Morice LRMP unless noted otherwise)	Hectares	Camping Sites With Road Access	Back Country Sites	Cabins/ Lodges	Boating/ Fishing	Hiking/ Walking Trails	Cycling	Horseback	Snow-mobiling	All Year	Hunting
Babine Lake Marine, top of Babine Lake (in Morice LRMP)	37	yes, 20 sites	no	no	yes, on Babine Lake	no	on roadways	no	no	no winter	no
Babine Mountains, just north of Smithers	32,400	no	allowed, no facilities	Joe L'Orsa Cabin	no	Various	yes on some trails	yes on some trails	yes but some restrictions	yes, some backcountry skiing & snowmobile areas	no
Babine River Corridor (see note 1 regarding Rainbow Alley and Nilkitwa Lake)	14,523	rustic, 12 sites & MOF site	allowed, no facilities	Fort Babine Lodge offers camping and cabins	yes, rafting, kayaking, fishing	yes	yes	no	no	no winter	no
Francois Lake	7,214	yes	allowed, no facilities	no	yes, on Francois Lake	Various	no	yes	no	no winter	no
Mount Blanchet, north east of Morice LRMP	24,774	no	no	no	fishing	yes	no	no	no	no winter	yes
Red Bluff, on Babine Lake in Morice LRMP	148	yes, 27 sites	no	no	yes on Babine Lake	yes	on roadways	no	no	no winter	no
Rubyrock Lake, east of Morice LRMP	41,233	no	no	no	yes, Rubyrock Lake	yes	no	no	no	no winter	yes
Tyee Lake, along Highway 16 near Smithers	33	yes, 59 sites	no	no	yes	yes	yes	no	no	yes, skiing trails & skating	no
Uncha Mountain Red Hills Park, east of Morice LRMP along Francois Lake	9,866	no	no	no	yes, on francois Lake	yes	no	yes	no	no winter	yes
TO SOUTH OF LRMP AREA											
Kitlope Heritage Conservancy	321,120	no	allowed, no facilities	One cabin near Kitlope River	yes	yes	no	no	no	no winter	yes
Tweedsmuir (north and South)	981,000 (largest park in B.C.)	yes (South)	yes	yes	yes	yes	yes (South)	yes (South)	yes (South)	yes (South)	yes

Note: The Rainbow Alley Park (110 Hectares), Nilkitwa Lake Park (7 Hectares) and Babine Lake/ Smithers Landing (8 camping sites) are also along the Babine River system of parks and provide fishing and recreational opportunities.
Source: BC Parks.

Economic Impact and Net Economic Value of Provincial Parks and Recreation Areas

Consumers may derive value from the parks beyond what is being spent on park facilities and visitor related expenses (consumer surplus). BC Parks commissioned Coopers and Lybrand to complete an economic impact study of parks in 1995/1996, which provides estimates of consumer surplus associated with BC Parks. In that study, the consumer surplus per user day is estimated at $31 per user day for day use and at $33 per user day for camping visits ($1994).

In 2001, BC Parks updated parts of the Coopers and Lybrand study and estimated the direct, indirect and induced impacts associated with B.C. Parks and Recreation Areas in terms of direct BC Parks expenditures, visitor expenditures, gross domestic product, and employment.

The main economic impacts associated with parks and recreation areas in B.C. are associated with day use and camping visits, and depend on the facilities that are offered to visitors.

Table 61 Selected Economic Impact Data for B.C. Parks and Recreation Areas

	B.C.
Park Facilities & Attendance (2000)	
Number of Campsites (vehicle accessible)	12,969
Camping Visits (vehicle accessible)	2,634,934
Day Use & Boat Use visits	20,909,351
Total Visits	23,544,285
Camping Parties/Camping Site (3.2 visits per party)	63
Estimated Economic Impacts (1999)	B.C.
1999 Visits	24,271,004
Direct Expenditures	$533 million
Total Provincial GDP (direct, indirect and induced)	$521 million
Direct Employment from Operations (FTEs)	800 FTEs
Indirect and Induced FTEs from Operations	550 FTEs
FTEs of Employment from Visitor Spending	7,750 FTEs
Total FTEs	9,100 FTEs

Notes:

1. FTE: Full Time Equivalent.
2. Employment from operations includes B.C. Parks employees (355 FTEs), Contractors and Youth Team employees (444 FTEs), and indirect and induced FTEs (560 FTEs).
3. Direct expenditures include the combined effects of visitor expenditures ($486 million) and B.C. Parks operational budget including park operations, contractors & youth employment programs ($47 million).

Source: BC Parks. B.C. Ministry of Water, Land and Air Protection, *Economic Benefits of B.C.'s Provincial Parks*, 2001.

APPENDIX 7 TRAPPING SECTOR

There are 62 trapping territories managed by WLAP that are either entirely or partially within the Morice LRMP area.[106] In 1998, approximately 1,000 animals were harvested in the Morice LRMP area, although this was a particularly low harvest and the annual average between 1989 and 1998 (1,996 animals) may be more representative of on-going trapping activity.

Pelt prices are an important factor in determining the numbers of animals killed annually and pelt prices are currently significantly lower than they were in the late 1980s. For example, the price for Marten pelts dropped to approximately $50 in 2001 compared to a peak of over $100 in 1987/88 ($144 in 2003 dollars). There are some indications that the demand for pelts is becoming stronger.

Trapping in the Morice LRMP area generates an estimated $87,000 in annual revenues assuming the following average prices per pelt and the 1989 to 1998 average harvest levels for selected species.

Trapping is also important to First Nations for economic, cultural and traditional use. First Nations have both registered trapping territories and trap lines associated with their traditional territories.

Table 62 Estimated Harvest from Trapping for the Morice LRMP Area

Estimated Harvest from Trapping for the Morice LRMP Area - Selected Species	1998 Harvest	1989-1998 Average Harvest	Price Per Pelt	Estimated Annual Revenues
Marten	792	1,638	$50	$81,920
Beaver	115	158	$24.38	$3,842
Weasel	79	146	$3.12	$457
Mink	56	54	$16.83	$909
Total - Major Species	1,042	1,996		$87,128

Source:

1. Prices for beaver, weasel and mink represent the average sales prices as reported for February 2003 from the North American Fur Auctions (NAFA); from web site (nafa.ca) February 10th 2004.
2. Average prices for Marten represent average prices for 2001 as reported in B.C. Ministry of WLAP, *Furbearer Management Guidelines, Marten*, May 2003.
3. Average harvest and 1998 harvest data are for the 62 territories that overlap the Morice LRMP area and are from: Horn, Hannah and Gregory C. Tamblyn, *Morice Planning Area Background Report*, page 78.

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[106] Source: Horn, Hannah and Gregory C. Tamblyn, *Morice Planning Area Background Report*, page 77.

APPENDIX 8 BOTANICAL FOREST PRODUCTS

Botanical forest products are often described as non-timber based products, generally including any products in the forest other than trees used for the production of lumber and other solid wood products or pulp. The Ministry of Forests estimates that there are approximately 200 such products that are currently commercially harvested in B.C. grouped in 7 categories as follows:

- Wild edible mushrooms including pine and chanterelle mushrooms;
- Floral and greenery products such as salal, pine bough and cedar foliage;
- Medicinal and pharmaceutical products such as mushrooms and herbs;
- Fruits and berries;
- Herbs and vegetables;
- Landscaping products such as ornamental trees; and
- Craft products made from wood, bark and other flora.

In 2000, the Ministry of Forests conducted a comprehensive study of the social and economic potential of non-timber forest products (NTFP) and services in the Queen Charlotte Islands/ Haida Gwaii (QCI/HG).[107]

Socio-Economic Impacts of Non-Timber Forest Products in QCI/HG

The NTFP industry in QCI/HG is at a crossroad with significant NTFP commercial activity (mainly the harvest of edible wild mushrooms) conflicting with First Nations values, local residents and established tenure holders such as the existing forest industry.

Various issues and concerns outlined in the QCI/HG report include:

- The harvesting of wild mushrooms in QCI/HG generates significant socio-economic benefits to those involved, but this does not always include the local communities.

- NTFPs are suffering from the classic "common property resource" problem, where a resource is currently available to everyone who wishes to use it. At the moment, there are no incentives for harvesting NTFP in a sustainable manner, and the existing sector provides no economic rent to the Crown/ resource owners.

- Many of the mushroom areas in QCI/HG would not be viable to harvest were it not for forest service roads, and as a result, road deactivation is becoming an issue.

The QCI/HG report provides valuable information on the NTFP industry in B.C. noting that in 1998, it generated over $280 million in direct sales in B.C., or approximately 2% of the over $12 billion in revenues from the wood products sector. Approximately $50 million in revenues are from the harvest of pine mushrooms and another $60 million are from the sale of salal and other floral greens, mainly from Vancouver Island.[108]

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[107] B.C. Ministry of Forests (Sinclair Tedder) and Mitchell Consulting Associates, *Seeing the Forest Beneath the Trees: The Social and Economic Potential of Non-Timber Forest Products and Services in the Queen Charlotte Islands/ Haida Gwaii*, prepared for South Moresby Forest Replacement Account, 2000, 144 pages.

The growth of NTFP in QCI/HG is limited by the usual business constraints such as marketing and financial constraints. The high transportation costs associated with shipping NTFP from Northern B.C. is also often mentioned as a constraint.

The QCI/HG report makes various recommendations for fostering the development of various NTFP opportunities in the region. For example, there may be opportunities to work in cooperation with the timber industry to foster the NTFP sector, for example, "removing undergrowth such as heavy salal could facilitate silviculture and eventual timber harvesting."[109]

Morice LRMP Economic Development Plan (EDAP)

The Morice LRMP EDAP[110] identifies various opportunities associated with botanical forest products including: cultural and traditional use products (for example, berry picking); species for pharmaceutical development; and production of willow furniture (also called alder whips furniture).

The Economic Development Plan makes various suggestions to the LRMP Table. One of the key recommendations is the need to conduct inventories of suitable sites for botanical forest products. For example, the EDAP recommends an inventory of the best berry sites so that areas well suited for berry production are managed for this use, and so that access to these high valued berry sites is maintained.

The EDAP notes that the regional isolation and high transportation costs may pose a constraint to these opportunities.

First Nations Values

The Morice LRMP stresses the importance of botanical forest products to First Nations cultures. The use of plants and mushrooms is "deeply entrenched in the culture of First Nations people. The availability and density of botanical forest products within each Wet'suwet'en House Territory is considered a status symbol."[111]

The Office of the Wet'suwet'en and KWB Contacting Ltd. have developed a Berries Management Plan[112] that includes:

1. A Landscape Preparation and Management component: including berries habitat research and restoration, data collection, etc.
2. the development of the Wet'suwet'en Botanicals harvesting Co-operative; and
3. the adoption of the Landscape Protection initiatives, which deal with the burning and fire management aspects of land preparation.

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[108] Source: B.C. Ministry of Forests (Sinclair Tedder) et al., page 21.

[109] Source: B.C. Ministry of Forests (Sinclair Tedder) et al., page 41.

[110] B.C. MSRM Skeena Region and Westcoast CED Consulting Ltd., pages 107 to 134.

[111] B.C. MSRM, Morice LRMP, version 2.12, February 3, 2004, page 67.

[112] Office of the Wet'suwet'en and KWB Contracting Ltd., *Joint Fire Fighting proposal – Burning for Berries (Berries Management Plan)*, draft, provided to *Pierce Lefebvre Consulting* in February 2004.

The Berries Management Plan represents only one facet of the botanical forest products opportunity. The Wet'suwet'en's economic development plans also include the development of eco-tourism and cultural ventures, which are likely to take into account the traditional use of botanical forest products by First Nations.

APPENDIX 9 FIRST NATIONS

The socio-economic analysis recognizes that both aboriginal and non-aboriginal communities depend on the same land based resources in the Morice LRMP area for wildlife, fisheries, forestry, mining, tourism etc. However, Aboriginal values, rights, and circumstances are often quite different than those of the rest of the population. This section addresses specific Aboriginal concerns in the plan area that have not already been covered in other sections of the Socio-Economic Analysis.

There are Five First Nations that have declared interests in traditional territories in the Morice LRMP area under the tripartite treaty negotiation process: Lake Babine (Nat'oot'en); Office of the Wet'suwet'en; Carrier-Sekani; Cheslatta Carrier and Yekooche. The Office of the Wet'suwet'en has been a full participant in the Morice LRMP planning process, and more information is available on Wet'suwet'en interests and concerns than is available for the other First Nations or Tribal Councils.

Appendix 9-1 Office of the Wet'suwet'en

The Office of the Wet'suwet'en estimates that it represents over 5,000 Wet'suwet'en people with traditional matrilineal clan heritage and interest in Wet'suwet'en traditional territory. Of these, 2,362 were registered in 2002 under the Hagwilget Village or Moricetown groups with Indian and Northern Affairs Canada, including 1,011 on reserve and 1,351 off reserve.

Although 53 percent of Wet'suwet'en traditional territory claimed under the treaty negotiation process is located within the Morice LRMP area (covering the southern 74% of the plan area), there are no year-round Wet'suwet'en communities within the plan area. Within the Morice LRMP area there is a very substantial overlap between lands claimed to be Office of the Wet'suwet'en traditional territory and lands claimed to be Carrier Sekani Tribal Council traditional territory. A small portion of this is additionally claimed as traditional territory of the Tsimshian Tribal Council, and an additional area of overlap occurs with Cheslatta Carrier interests in the southern most part of the Plan Area.

The Wet'suwet'en are very active in economic initiatives. They have developed Wet'suwet'en Enterprises that deals with small-scale salvage and probing in the Nadina Mountain, Whitesail and upper Morice River areas. Their integrated forestry management expertise includes layout, GIS analysis, harvesting, silviculture and green-up expertise. Another major initiative is the Wet'suwet'en Berries Management Plan. Traditionally the Wet'suwet'en employed burning of berry grounds in autumn to promote the sprouting and regeneration of the berry plants.[113] The Wet'suwet'en are interested in re-introducing broadcast burning in the Plan Area.

Eco-cultural tourism is another cornerstone of the Wet'suwet'en plan for economic sustainability. They have identified a number of areas of interest, including Morice Lake, Owen Lake, Nadina Mountain, Nanika Kidprice, Thautil River corridor, China Nose, Nadina River, and McQuarrie Lake, Burnie Lakes and Atna Lakes for potential eco-cultural tourism development. The Wet'suwet'en are very interested in developing tourism trail networks, based on traditional trails, and are interested in how forest management practices will accommodate trail development.

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[113] Athryium Services & Consulting, *Wet'suwet'en Berries Management Plan – Feasibility Study and Gap Analysis*, March 5, 2003.

Part of the Wet'suwet'en interest is in promoting cross-cultural understanding. A number of cross-cultural tours have been developed by the Wet'suwet'en and are offered regularly to industry. Part of their tourism strategy is to work closely with Northwest Community College and Simon Fraser University to promote understanding of regional anthropology sites.

The Wet'suwet'en have a non-replaceable floating timber license for 50,000 cubic meters per annum in the Lakes TSA, targeting beetle killed timber. This is a volume-based license that is good for 10 years, but they have yet to activate the license. The Wet'suwet'en are concerned that this license is not area based. Their preference is to utilize their Territorial Stewardship plan to practice stewardship on the land. They have another 15,000 cubic meter license with Houston Forest Products for timber in the Nadina Mountain area. A cultural heritage initiatives crew conducts reconnaissance sweeps of all chart areas within the Wet'suwet'en area, prior to Forest Development plans being developed. The Wet'suwet'en are developing GIS in collaboration with MSRM, and are providing GIS analysis, data sharing and databases to forestry proponents.

The Wet'suwet'en are concerned that the rate of cut in the Morice LRMP area is too high and jeopardizes future employment for Wet'suwet'en members in both timber and non-timber forest products (personal communication, Andrew George, June 9, 2003). The Wet'suwet'en are interested in using their traditional boundaries as the basic management unit. They have concerns regarding rangeland expansion in the Plan Area, not respecting traditional use and cultural heritage sites.

Appendix 9-2 The Lake Babine Nation (Nat'oot'en)

The Lake Babine Nation has over 2,051 members (INAC 2002[114]), with 1,370 on reserve and 681 off reserve. The majority of the population lives outside of the Plan Area, with the largest concentration (593 – Census 2001) on the Woyenne reserve near Burns Lake. The communities of Tachet (pop. 86 – Census 2001) and Fort Babine (pop. 77 – Census 2001) are within or on the border of the Plan Area.

Most of the Morice LRMP area north of Highway 16 has been identified by the Lake Babine Nation as traditional territory in treaty negotiations, some of which is overlapped by traditional territory claims by the Yekooche First Nation and the Carrier Sekani Tribal Council.

The Babine Nation has expressed three main areas of socio-economic concern that are specific to their Nation within the Plan Area.

- **The Barricade Treaty** – Federal fisheries signed in 1904-1906 for the Lake Babine Nation to stop using fish weirs in exchange for farm implements and seeds.
- **High unemployment & illiteracy** – the Lake Babine Nation is concerned that resources are leaving their traditional territories, with no benefits to community members.

- **Inadequate infrastructure in isolated communities** – Due to the relative remoteness of the communities of Fort Babine and Tachet, residents experience high costs for regular services.

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[114] Indian and Northern Affairs Canada, *Registered Indian Population by Sex and Type of Residence by Group, Responsibility Centre and Region*, 2002; www.ainc-inac.gc.ca (February 2004).

Most services require a drive of at least 1.5 hours to either Smithers or Burns Lake, which provides a range of services including health clinics and hospital services.

The Lake Babine Nation is working on a number of economic initiatives including 2 woodlots in Fort Babine and Old Fort, a community forest proposal and a market feasibility study for ecotourism in the north part of their traditional territories with interconnecting trails.

Appendix 9-3 Carrier Sekani Tribal Council

The Carrier Sekani Tribal Council represents several member bands in treaty negotiations (population of 12,000 estimated in Statement of Intent), including the Burns Lake Indian Band and Wet'suwet'en First Nation that have populated reserves east of the Morice LRMP area near Burns Lake. INAC 2002 registered population was 88 for the Burns Lake Indian Band, and 208 for the Wet'suwet'en First Nation.

Statement of Intent boundaries for the Carrier Sekani Tribal Council cover some 95,000 square kilometres of B.C., including about two thirds of the Morice LRMP area. There is substantial overlap between Carrier Sekani Tribal Council and Office of the Wet'suwet'en Statement of Intent boundaries in the Plan Area. Smaller overlaps also occur with Cheslatta Carrier and Tsimshian boundaries.

Appendix 9-4 Cheslatta Carrier Nation

The Cheslatta Carrier Nation comprises some 286 registered band members (INAC 2002) centred on the south shore of Francois Lake. Statement of Intent boundaries show traditional territories located primarily south of Ootsa Lake, but extending into the southern most portion of the Morice Plan Area. Indicated traditional territories in the Morice plan area are overlapped entirely by Office of the Wet'suwet'en Statement of Intent boundaries, and partially by Carrier Sekani Tribal Council Statement of Intent boundaries.

The Cheslatta Carrier Nation is a joint venture partner in a modular stud mill on Ootsa Lake which is supplied by timber salvaged from in the Nechako Reservoir, and from beetle infested wood in the Lakes Timber Supply Area.

Appendix 9-5 Yekooche First Nation

The Yekootche First Nation has 175 registered band members (INAC 2002), most of whom live on reserve on the shores of Stuart Lake to the east of the Plan Area. Statement of Intent boundaries describing traditional territory extend into the Morice LRMP area along the shores of Babine Lake, and are entirely overlapped by Lake Babine Nation Statement of Intent boundaries in the Plan Area.

Much of the mature forest within the Yekooche's stated traditional territory in the Fort St. James TSA is infested with mountain pine beetles. The Yekooche First Nation is involved in silviculture contracting, and hopes to apply for a forest harvest license to log pine beetle infested timber in the Fort St. James area.

APPENDIX 10 ADJUSTMENTS TO BASE CASE SOCIO-ECONOMIC INFORMATION

Various documents containing socio-economic data have been prepared for the Morice LRMP as follows:

- Horn, Hannah et al., *Morice Planning Area Background Report: An Overview of Natural, Cultural, and Socio-Economic Features, Land Uses and Resources Management*, Prince Rupert Interagency Management Committee, MSRM, 2000.
- B.C. MSRM Skeena Region, *Morice Land & Resource Management Plan, Participant Handbook*, 2003.
- Pacific Analytics Inc. et al., *Morice LRMP Base Case Socio-Economic Assessment*, prepared for MSRM Skeena Region, 2004, 75 pages.

The objectives of this study are to build on the information presented to the Morice LRMP Table and assess the likely socio-economic impacts the LRMP may have on the local area, the region and B.C.

A first step in this assessment is to identify the socio-economic variables that are likely to be most affected by the Morice LRMP. This Appendix summarizes the socio-economic Base Case data collected from those documents and explains where adjustments were made to the data. In general, the Base Case socio-economic data were adjusted as a result of the following factors:

- Data presented in the Base Case reflected resource values covering a greater area than the Morice LRMP area;
- More up-to-date information became available;
- Focused on activities that depend more directly on the Morice LRMP area resources and backcountry; and
- Considered recreation values more explicitly.

The following table summarizes the adjusted Base Case data and provides various notes that explain the data adjustments. More detail is provided in the Appendices pertaining to each of the sectors.

Table 63 Adjusted Base Case Data for Morice LRMP Assessment

Adjusted Base Case	Local Direct Employment	B.C. Direct Employment	Direct GDP ($ Million)	B.C. Direct Government Revenues ($ Million)	B.C. Net Economic Value ($ Million)
Total Labour Force	2,770				
Sectoral Data:					
Forestry (AAC excl. woodlots)	1,018	1,442	$198.08	$89.05	$66.51
Huckleberry Mine	82	215	$38.95	$1.90	$1.65
Agriculture	20	20	$0.89	$0.05	$0.06
Backcountry Tourism:					
Guide Outfitting	21	21	$0.64	$0.08	$0.16
Guided Angling	13	13	$0.94	$0.09	$0.19
Other Commercial Tourism	9	9	$0.38	$0.05	$0.05
	43	43	$1.96	$0.21	$0.41
Other Industrial Sectors:					
Trapping	62 territories; average annual revenues of $90,000 for Morice LRMP				
Mineral Exploration	ARIS 1970-2002 Expenditures: $2 million/yr ($2002); 4.3% of B.C. Exploration				
Oil & Gas	No existing activity - some potential				
Hydro-electric	Nechako reservoir system, potential run of river projects				
Botanical Forest Products	Limited existing activity - some potential				

Notes:

Information noted in blue has been adjusted. Adjustments are explained as follows:

1. Stumpage rates are based on 1997 to 2002 (6 years) whereas the Base Case uses only 1997-2000 data.
2. The Base Case does not provide GDP data for the forest sector; GDP was estimated using a BC Interior average of approximately $100 per m3 based on BC Stats data. This includes forestry and primary wood products, pulp and paper manufacturing.
3. Local Huckleberry mine employment was adjusted to reflect local residents based on data provided in Pacific Analytics Inc. et al., *Morice LRMP Base Case Socio-Economic Assessment*, 2004.
4. Guide outfitting & agriculture were adjusted to reflect activities dependent on Morice LRMP landbase.
5. Other commercial tourism was adjusted to reflect only backcountry tourism (not front-country).
6. The Net Economic Value was added to help reflect rents from the public sector, labour and industry. Public Sector rents are assumed to equal stumpage and royalties, but not employee income taxes & direct corporate taxes such as land, property, sales, etc. Net economic values for industrial sectors also includes estimates of labour rent equal to 5% of direct wages & salaries, and in case of tourism, 5% on industry revenues. The Net Economic Value assumes no industry rents to capital for forestry, mining & agriculture.

Table 64 Summary of Estimated Recreation Activity in Morice LRMP Area

Recreation in the Morice LRMP Area		$ Spent per Day
Resident Hunting	10,000 to 16,500 hunter days	$50
Resident Angling	Est. 52,500 angling days	$29
Snowmobile Activities	12,000 recreation/visitor days	non-locals: $85 to $225 per day
Camping	20,000 camping visits	Not available
Non-Motorized & Other	Not available	$45
Total Recreation Days	94,500 to 101,000 recreation days	

Recreation	Net Economic Value/ Willingness to Pay	
Depends on Activity and Source of Data	B.C. WLAP estimates values in $50 range; Environment Canada survey estimates values in $10 to $20 range	100,000 days @$10 per day yields $1 million; @$50 per day yields $5 million

Note: Data sources for the above data are as follows:

1. Total hunter days and associated net economic values include some double counting as individuals hunt in more than one Morice LRMP Management Unit, and hunt for more than one species at a time. Total economic values are in $1999 and are estimated by MWLAP based on: BC Environment, *1995 B.C. Resident Hunter Survey*. **Source**: B.C. Ministry of Water, Land and Air Protection, Wildlife Branch

2. Resident angling is based on a survey of freshwater angling for B.C. by region and the Morice LRMP area having an estimated 15% of Skeena region freshwater angling based on the Morice LRMP area sharing 15% of the steelhead angler fishery in the Skeena region. Various WLAP surveys as reported in: G.S. Gislason & Associates Ltd., *Freshwater Angling in B.C. - An Economic Profile*, MSRM, 2003; and in Pacific Analytics et al., *Morice LRMP Base Case Socio-Economic Assessment*, 2004.

3. Snowmobile activity is based on estimates of usage for each major snowmobiling area in the Morice LRMP area. Source: personal communication, Les Auston, Houston Snowmobile Club, January 2004.

4. Camping visits are based on number of visits per campsite at Red Bluff & Tyhee Lake Provincial Parks (Source: BC Parks, 2000 Provincial Park Attendance in Parties, 2000), and the number of MOF recreation campsites in the Morice LRMP area (Source: Horn, Hannah and Gregory C. Tamblyn, *Morice Planning Area Background Report*, pages 64 and 65).

5. The level of expenditures per recreation day are based on averages for all of B.C. and are based on Environment Canada (EC), *The Importance of Nature to Canadians: The Economic Significance of Nature Related Activities in 1996*.; Snowmobile expenditure data are based on: City of Revelstoke, *Revelstoke Snowmobile Strategy*, 2002, www.cityofrevelstoke.com/edc/ snowmobile.

6. Net Economic Value estimates are based on a variety of sources including: Roger Reid, *Economic Value of Wildlife Activities in British Columbia, 1996*, BC Ministry of Environment, Lands and Parks, Victoria, 1998 (Tables 21(page 3) & 23 (page 26)); B.C. Environment, *B.C. Resident Hunter Survey, 1995*; B.C. Ministry of Water, Land and Air Protection, *Economic Benefits of B.C.'s Provincial Parks*, 2001; and Environment Canada (EC), *The Importance of Nature to Canadians: The Economic Significance of Nature Related Activities in 1996*.

The following table summarizes the direct impact data from the original Base Case, mainly to assist the reader who may refer to the Base Case data for additional background information on the Morice LRMP area.

Table 65 Summary of Base Case SEA Data

Base Case Results - Direct Impacts	Local Direct Employment	B.C. Direct Employment	Direct GDP ($ Million)	B.C. Direct Government Revenues ($ Million)
Total Labour Force	2,770			
Sectoral Data:				
Forestry	1,030	1,460	n/a	$113.54
Huckleberry Mine	215	215	$38.95	$1.90
Agriculture *	85	85	$3.84	$0.20
Tourism & Recreation:				
Guide Outfitting *	53	53	$1.70	$0.20
Guided Angling	13	13	$0.94	$0.09
Other Commercial Tourism	15	15	$0.38	$0.05
Add. Non-Res. & Resident Non-Local	17	17	$0.51	$0.06
	98	98	$3.52	$0.40

* Applies to larger area than Morice LRMP area.

Note:

Base Case provincial government revenues include direct corporate taxes and royalties such as stumpage, other corporate taxes such as sales taxes and property taxes, and employee income taxes.

Source: Pacific Analytics Inc. et al, *Morice LRMP Base Case Socio-Economic Assessment*, 2004, 75 pages.

APPENDIX 11 AREA STATISTICS

The Ministry of Sustainable Resource Management (MSRM) provided Geographic Information System (GIS) data to *Pierce Lefebvre Consulting* who then tabulated the results. Referred to as Area Statistics throughout the report, the GIS data overlay various resource values and activities (e.g. Timber Harvesting Land Base, mineral potential, tourism uses, aboriginal values, etc.) with the boundaries of the areas subject to specific resource management direction (e.g. Protected Areas, No Timber Harvesting zones, etc.).

The Area statistics are based on Version 5 of the area specific management package in the LRMP, which is slightly different than the final plan agreed upon by the LRMP Table. The Area Statistics were not revised as the changes would not be significant in terms of resource values distribution. The differences between the proportions of plan area in various resource management zones under Version 5, and under the final plan package are summarized in the following table and described following.

Table 66 Proportion of Plan Area by Resource Management Zone

	AREA (hectares)	% of Total	Area Stats - Version 5 of ASM
GMD	962,954	64.12%	64.76%
Area Specific Management - No Timber Harvest			
Morice Lake	108,359	7.22%	
Herd Dome	14,234	0.95%	
Starr Creek	8,167	0.54%	
Swan Lake - China Nose	2,082	0.14%	
Tahtsa - Troitsa	164,420	10.95%	
River and Trail Core Areas	9,654	0.64%	
Sub-Total	306,916	20.44%	20.59%
Area Specific Management - Other			
Morice River	25,181	1.68%	
Nanika River	1,915	0.13%	
Nadina Owen	12,526	0.83%	
Friday Lake - Nakinilerak Lake - Hautete	9,943	0.66%	
Morrison Lake	7,662	0.51%	
Babine East Arm	2,714	0.18%	
Grease Trail	2,541	0.17%	
Matzehtzel Mountain - Nez Lake	15,268	1.02%	
Bulkley River	7,578	0.50%	
Granisle Community Recreation Forests	4,034	0.27%	
Houston Community recreation Forests	3,511	0.23%	
Morice Mountain	5,461	0.36%	
Twinkle-Horseshoe Chain	5,528	0.37%	
Nadina River	6,016	0.40%	
Thautil-Gosnell	35,358	2.35%	
Less River and Trail Core Areas	-9,654	-0.64%	
Sub-Total	135,582	9.03%	8.73%
Protected Areas:			

	AREA (hectares)	% of Total	Area Stats - Version 5 of ASM
Atna Ecological Reserve	973	0.06%	
Nanika Kidprice	52,824	3.52%	
Burnie Shea Lakes	33,963	2.26%	
Nadina Mountain	2,440	0.16%	
Old Man Lake	286	0.02%	
Babine Lake Marine Parks:			
North Spit	10	0.00%	
Sanctuary Bay	842	0.06%	
Old Fort	10	0.00%	
Bear Island	229	0.02%	
Port Arthur	148	0.01%	
Sand Point	1	0.00%	
Long Island - Cottonwood Point	1,087	0.07%	
Wrights Bay - Wilkinson Bay	3,433	0.23%	
Sub-Total Babine Lake Marine Parks	5,760	0.38%	
Sub-Total - Protected Areas	96,246	6.41%	5.92%
TOTAL MORICE LRMP AREA	1,501,698	100.00%	100.00%
Babine Lake Marine Parks Water	3,667		
Excluding Water from Babine Lake Marine Parks:			
Protected Areas	92,579	6.18%	5.92%
Total Morice LRMP Area	1,498,031	100.00%	100.00%

Source: Based on MSRM GIS data, March 25th, 2004.

The following lists the changes from Version 5 area specific management package in the LRMP to that agreed upon in the final plan for the Morice LRMP.

- Nanika River – portion of Nanika River polygon is now managed through the Nanika-Kidprice PA which offers higher protection of river values.
- Addition of Atna Ecological Reserve within the Morice Range; ecological reserves provide a higher level of protection for conservation values.
- Morice/Nanika and Morice Range polygons merged; similar values and management intent
- Burnie-Shea Lakes – West boundary (around Howson Range), SE boundary along Burnie River and North boundary adjacent to Starr Basin were modified to exclude mineral interests.
- Starr Creek Basin – boundary changed as described above.
- Nadina River – Buffers around Nadina and Newcombe Lakes removed (covered by Lakes Management Strategy)
- Nadina-Owen – merged Nadina Petition Core and Nadina Petition Areas into one polygon (Nadina-Owen) and changed boundary to reduce total size (to reflect existing "co-management" agreements in this area between OW and HFP)
- Nadina Mountain PA – no change
- Morice River – no change in the area of the upper or lower polygons. The table agreed to map these units as a single unit, the "Morice River". However management direction for the upper and lower portions has not changed.
- Houston Community Recreation Forest addition (2 areas, the small area is very small and doesn't show on the map, located close to town).
- Granisle Community Recreation Forest addition.

- Bulkley River – addition of lower Bulkley (i.e., below the confluence of the Morice)
- Old Man Lake – China Nose – Separate polygon for Old Man Lake protected area (286 ha) within the larger area specific. The larger area specific polygon (Swan Lake – China Nose) was modified slightly to exclude a woodlot area to the north boundary.
- Babine Lake –
    - Area specific polygon removed as it is now covered by Lakeshore Management Strategy.
    - Addition of 7 small marine parks on the main body and northwest arm of the lake.
    - Small buffer on east arm of Babine Lake
- Morrison Lake expanded buffer to manage biodiversity
- Friday and Nakinilerak Lakes – Boundaries adjusted to smooth edges between lake buffers

The tables following show the Area Statistics provided by MSRM for the purpose of this socio-economic assessment.

Table 67 Highlights of Area Statistics for the Morice LRMP Area

Morice LRMP	Area (Hectares) or Number of Sites	Proportion of Total Resource by Management Influence				
		Proposed Protected	No Timber Harvest	Sub-total	Other Area Spec.	GMD Only
Proportion of Plan Area	1,501,698 ha	6.4%	20.4%	26.8%	9.0%	64.1%
Proportion of Plan Area Version 5 of ASM	1,501,712 ha	5.9%	20.6%	26.5%	8.7%	64.8%
Timber Harvesting Land Base	692,932 ha	1.4%	2.4%	3.8%	11.0%	85.2%
Timber Volume	153,239,319 m3	1.5%	2.3%	3.8%	11.9%	84.3%
High Metallic Mineral Potential	607,981 ha	5.2%	25.1%	30.3%	5.8%	63.9%
Moderate to High Metallic Min. Potential	809,403 ha	7.9%	17.7%	25.6%	13.2%	61.2%
Extreme Industrial Mineral Potential	64,660 ha	41.7%	32.8%	74.5%	2.6%	23.0%
Mineral Tenures	63,670 ha	0.5%	15.2%	15.7%	13.8%	70.5%
Mineral Occurrences	243 occ	2.1%	24.7%	26.7%	7.8%	65.4%
Exploration Expenditures	43,627,079 $	1.0%	17.0%	18.0%	3.6%	78.4%
High Oil & Gas Potential	42,791 ha	0.0%	0.8%	0.8%	19.5%	79.7%
High Agriculture Expansion Potential	52,439 ha	0.0%	5.9%	5.9%	8.9%	85.2%
Animal Unit Months (Forage)	16,387 AUMs	0.0%	2.3%	2.3%	11.0%	86.7%
Existing Tourism Facilities	29 sites	3.4%	10.3%	13.8%	17.2%	69.0%
Existing Tourism Features	234 sites	3.8%	19.2%	23.1%	13.7%	63.2%
Kilometres of Trail	606 km	5.4%	18.8%	24.2%	22.0%	53.8%
Recreation:						
Non-Motorized All Seasons	90,959 ha	21.9%	22.9%	44.8%	6.4%	48.8%
Non-Motorized Summer Only	187,512 ha	21.0%	55.0%	75.9%	6.7%	17.3%
Summer Restricted Motorized	90,272 ha	0.0%	1.7%	1.7%	17.0%	81.4%
Non-Motorized Winter Only	8,589 ha	0.0%	100.0%	100.0%	0.0%	0.0%
Tourism Opportunity (ha)						
High	55,877 ha	29.7%	48.3%	78.0%	11.3%	10.7%
Medium	106,070 ha	7.0%	50.4%	57.3%	6.2%	36.4%
Recreation Opportunity Spectrum (ha)						
Primitive	189,087 ha	26.3%	72.5%	98.7%	0.9%	0.4%
Semi Primitive Motorized	159,718 ha	10.7%	20.8%	31.5%	13.0%	55.5%
Semi Primitive Non-Motorized	291,105 ha	5.2%	29.7%	35.0%	10.5%	54.6%
Wet'suwet'en Cultural Heritage						
Kilometres of Trail	1,115 km	8.0%	10.0%	18.1%	25.8%	56.1%
Sites	97 sites	12.4%	15.5%	27.8%	37.1%	35.1%
Archaeological Overview Assessment						
High Risk of Finding Unknown Site (ha)	391,331 ha	5.6%	15.8%	21.4%	9.0%	69.6%
Sites	366 sites	1.1%	6.6%	7.7%	14.8%	77.6%

Notes: Table does not add due to rounding. The Area Statistics relate to Version 5 of the area specific management (ASM) package, except for the Proportion of plan area and the mineral potential statistics (metallic and industrial), which are based on the final version of the Morice LRMP (Final Land Use Recommendation, March 31, 2004). Most of the Area Statistics were not revised for the final ASM, as the changes would not be significant in terms of resource value distribution.

Source: Ministry of Sustainable Resource Management (MSRM).

Table 68 Morice LRMP Area Statistics

Morice LRMP Area Statistics - ASM Version 5	Total LRMP		General Management Direction (GMD)		Total Proposed Protected Area		Total No Timber Harvest Area		Other Area Specific (without Protected or No Timber Harvest Areas)	
Zones	GRAND TOTAL	THLB	THLB	Total	THLB	Total	THLB	Total	THLB	Total
Morice LRMP Area										
Hectares	1,501,712	692,932	590,526	972,493	9,901	88,954	16,325	309,167	76,180	131,099
Forests										
Volume in cubic metres	153,239,319	151,922,956	128,024,878	128,540,047	2,312,716	2,312,948	3,448,568	4,210,637	18,136,793	18,175,686
Community Forest (ha)	7,565	5,659	5,659	7,565	0	0	0	0	0	0
Woodlots (ha)	18,981	11	11	18,606	0	0	0	42	0	333
Scenic Areas - TSR_VAL (ha)										
High	523,464	189,267	149,561	318,936	6,875	44,340	9,872	115,760	22,959	44,428
Medium	44,589	30,066	30,066	44,589	0	0	0	0	0	0
Low	165,252	75,017	69,656	108,440	16	821	142	45,160	5,203	10,831
Scenic Areas - LRMP_VAL (ha)										
1	670,504	221,062	168,488	357,540	8,766	73,865	12,529	174,698	31,280	64,401
2	232,132	103,908	95,726	149,775	288	2,282	1,236	67,716	6,659	12,360
3	33,410	20,544	18,990	29,421	0	0	0	0	1,554	3,990
Visual Quality Objectives (ha)										
Modification	37,980	26,166	24,675	34,172	0	0	353	2,228	1,138	1,580
Preservation	36,402	4,539	1,171	2,955	314	3,277	2,048	28,297	1,006	1,874
Partial Retention	141,004	78,234	70,278	114,233	38	360	522	12,276	7,396	14,135
Retention	58,068	18,737	14,119	25,566	523	13,334	927	13,580	3,168	5,587
Agriculture										
ALR (ha)	39,366	863	801	31,296	0	0	3	1,924	60	6,146
Agriculture Leases (ha)	4,564	2,240	2,069	4,227	0	0	50	79	121	257
Range Tenures (ha)	130,818	72,965	69,335	121,359	0	0	104	1,232	3,526	8,226
Animal Unit Months	16,387	7,869	7,163	14,201	0	0	54	382	652	1,804
Arability Expansion Potential (ha)										
High	52,439	27,340	24,887	44,663	0	0	402	3,119	2,050	4,657

Morice LRMP Area Statistics - ASM Version 5	Total LRMP		General Management Direction (GMD)		Total Proposed Protected Area		Total No Timber Harvest Area		Other Area Specific (without Protected or No Timber Harvest Areas)	
Zones	GRAND TOTAL	THLB	THLB	Total	THLB	Total	THLB	Total	THLB	Total
Minerals										
Metallic Mineral Potential (ha)**										
High	607,981			388,446		31,824		152,432		35,279
Moderate to High	809,403			495,544		63,704		143,268		106,888
Moderate	84,268			79,430		2		1,552		3,284
Low to Moderate	4			4		0		0		0
Low	0			0		0		0		0
Industrial Mineral Potential (ha) ***										
Extreme	64,660			14,843		26,967		21,201		1,649
High	0			0		0		0		0
Moderate	362,311			303,204		6,624		22,934		29,549
Fair	110,300			84,978		262		0		25,060
Low	964,425			560,424		61,681		253,126		89,194
Mineral Tenures (ha)	63,670	33,240	27,621	44,861	0	312	381	9,682	5,238	8,815
ARIS										
Assessment Report Sites	925	448	412	702	0	15	2	134	34	74
Expenditures ($1986)	43,627,079	17,731,138	16,982,263	34,186,078	0	442,012	33,260	7,407,275	715,615	1,591,713
Metallic Mineral Occurrences										
Developed Prospect	14	5	5	10	0	1	0	3	0	0
Past Producer	14	2	2	11	0	0	0	2	0	1
Producer	1	0	0	1	0	0	0	0	0	0
Prospect	25	9	8	17	0	0	1	7	0	1
Showing	189	65	57	120	0	4	1	48	7	17
Total Occurrences	243	81	72	159	0	5	2	60	7	19
Gas potential (ha)										
High	0	0	0	0	0	0	0	0	0	0
Moderate	0	0	0	0	0	0	0	0	0	0
Low	13,699	8,280	6,817	11,310	0	0	0	0	1,464	2,389

Morice LRMP Area Statistics - ASM Version 5	Total LRMP		General Management Direction (GMD)		Total Proposed Protected Area		Total No Timber Harvest Area		Other Area Specific (without Protected or No Timber Harvest Areas)	
Zones	GRAND TOTAL	THLB	THLB	Total	THLB	Total	THLB	Total	THLB	Total
Poor	0	0	0	0	0	0	0	0	0	0
Oil & Gas potential (ha)										
High	42,791	23,978	19,740	34,104	0	0	280	354	3,959	8,332
Moderate	106,624	45,959	35,971	59,009	237	1,236	1,192	35,755	8,559	10,624
Low	0	0	0	0	0	0	0	0	0	0
Poor	471,758	153,626	126,277	205,224	6,707	45,129	8,825	202,920	11,817	18,485
Tourism and Recreation										
Existing Tourism Facilities	29	2	2	20	0	1	0	3	0	5
Existing Tourism Features	234	44	36	148	1	9	3	45	4	32
Kilometres of Trail	606	117	53	326	13	33	3	114	48	133
Recreation Non-Motorized All Seasons	90,959	16,757	13,695	44,411	169	19,925	1,054	20,817	1,838	5,806
Recreation Non-Motorized Summer Only	187,512	32,726	14,306	32,485	7,069	39,341	3,636	103,045	7,714	12,642
Recreation Summer Restricted Motorized	90,272	56,494	50,339	73,465	0	0	782	1,496	5,374	15,310
Recreation Non-Motorized Winter Only	8,589	0	0	0	0	0	0	8,589	0	0
Tourism Opportunity (ha)										
High	55,877	7,327	1,416	5,994	292	16,589	2,743	26,998	2,877	6,296
Medium	106,070	8,311	5,231	38,643	0	7,390	335	53,423	2,746	6,614
Low	351,939	82,923	63,938	181,711	1,944	22,019	2,589	112,679	14,453	35,530
Recreation Opportunity Spectrum (ha)										
Roaded Modified	694,548	499,839	449,540	612,860	193	452	5,893	21,004	44,214	60,231
Roaded Natural	50,067	10,243	7,139	23,647	0	0	530	17,907	2,575	8,513
Primitive	189,087	4,679	0	673	518	49,657	2,979	137,042	1,181	1,714
Rural	22,653	680	663	19,603	0	0	0	186	17	2,864
Semi Primitive Motorized	159,718	55,007	43,700	88,616	2,895	17,109	580	33,181	7,832	20,811
Semi Primitive Non-Motorized	291,105	119,276	87,801	158,827	5,633	15,231	6,295	86,601	19,546	30,446
Urban	5,976	20	20	4,867	0	0	0	0	0	1,109
Wildlife										

Morice LRMP Area Statistics - ASM Version 5	Total LRMP		General Management Direction (GMD)		Total Proposed Protected Area		Total No Timber Harvest Area		Other Area Specific (without Protected or No Timber Harvest Areas)	
Zones	GRAND TOTAL	THLB	THLB	Total	THLB	Total	THLB	Total	THLB	Total
Grizzly Bear Management Zones (ha)										
Remote GB Mgmt Zone	977,249	387,840	311,900	510,626	9,544	86,738	14,824	302,227	51,573	77,658
Unmanaged GB Zone	524,463	305,092	278,626	461,866	357	2,216	1,501	6,940	24,608	53,441
Caribou Habitat Management Area (ha)	490,835	177,518	152,143	280,902	1,585	20,349	2,447	160,931	21,343	28,653
Mountain Goat Core Habitat (ha)										
Potential	87,688	2,402	1,615	13,894	95	13,348	354	58,671	339	1,775
Occupied	12,369	1,064	837	3,906	14	2,138	23	5,914	190	411
Wet'suwet'en Cultural Heritage										
Kilometres of Trail	1,115	612	374	626	12	90	34	112	192	288
Sites	97	52	20	34	7	12	8	15	17	36
Archaeological Overview Assessment										
High Risk of Finding Unknown Site (ha)	391,331	199,481	170,921	272,474	4,505	21,773	4,838	61,918	19,218	35,166
Sites	366	113	88	284	1	4	8	24	16	54

Notes:

May not add exactly due to rounding

** Metallic Mineral Potential data is based on the June 2003 Level 2 MEM potential Assessment, and the Final Version of The Morice LRMP ASM.

***Industrial Mineral Potential data is based the Final Version of the Morice LRMP ASM.

THLB (Timber Harvesting Land Base) includes all Partial and Contributing Area

Total includes THLB and FE (Forested Exclusion), NFE (Non Forested Exclusion) and NC (Non Contributing)

Source: MSRM Skeena Region, March 2004.

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